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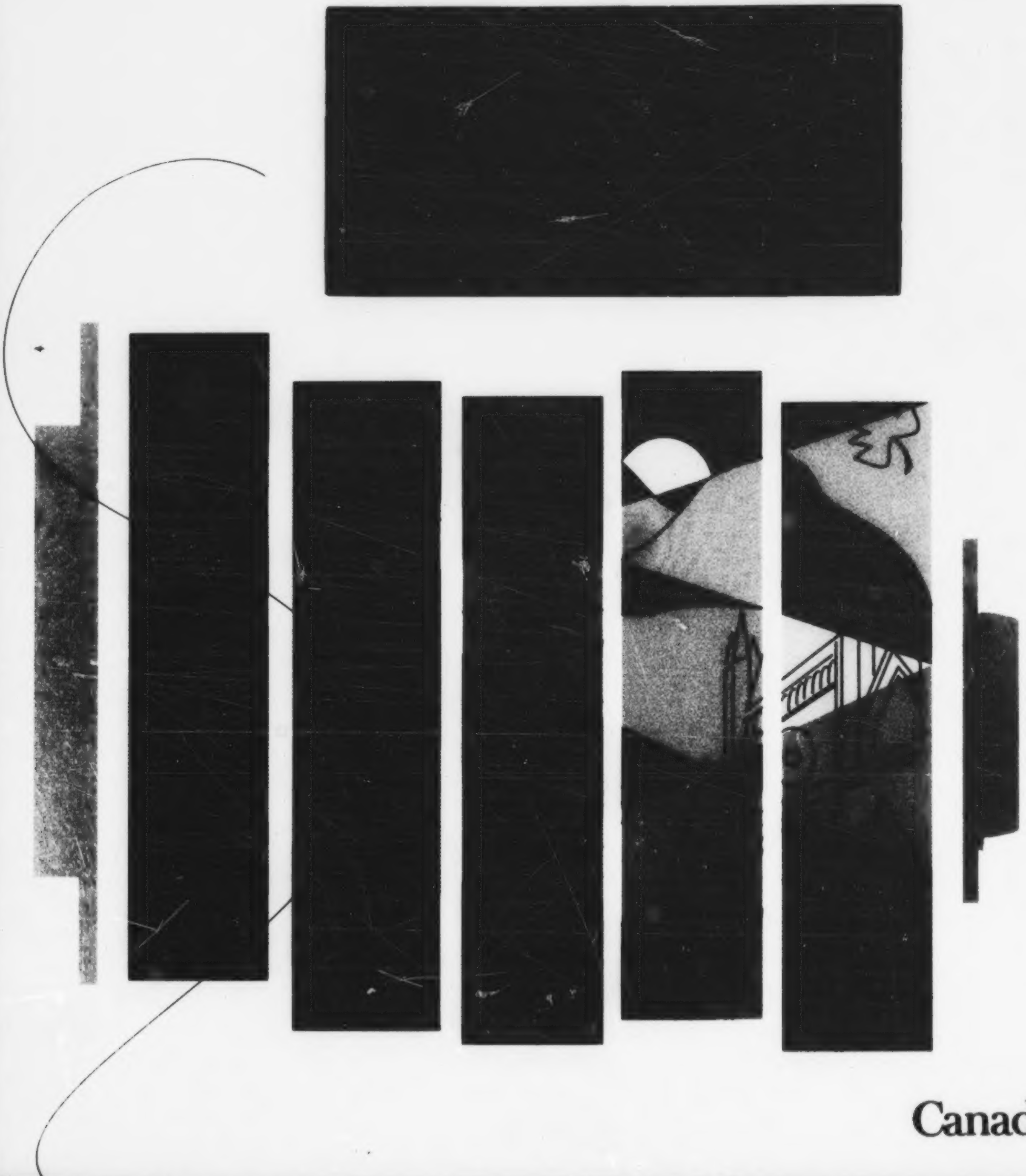

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Research Report

A Review of Marital and Family Variables as they Relate to Adult Criminal Recidivism

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A Review of Marital and Family Variables as they Relate to Adult Criminal Recidivism

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EXECUTIVE SUMMARY

Criminal behaviour is viewed as a complex phenomenon that results from a combination of biological, sociological, psychological, and situational antecedents (Eronen, Hakola, & Tiihonen, 1996; Moffitt, 1987; Spellacy & Brown, 1984). As a result, predicting criminality or even fully understanding its antecedents has been an enormous challenge for correctional workers, forensic scientists, and clinicians. There is growing evidence in support of the hypothesis that familial variables such as quality of parent-child relationships, familial criminality, parental illness and separation from parents, increase the likelihood of criminal behaviour. Consequently, this report reviews the relationship between marital and family variables and adult recidivism.

A thorough literature search was conducted using many different databases. Of the 238 identified studies, 193 were classified as empirical and 35 were classified as theoretical/narrative reviews. The majority of the studies were comprised of samples containing 100 or more recidivists. However, over half of the recidivism studies did not include a contrast group. Multivariate analyses were the highest level of statistical analysis used in 65 of the studies, while frequencies and structural equation modelling were the highest level of statistical analysis conducted in 25 studies.

It is believed that for some offenders, antisocial behaviour may result from a biological predisposition toward such behaviour. This has been explored by looking at the biological families of adopted offenders. Recidivistic non-violent criminal behaviour was significantly elevated when criminal involvement and mental disorder were characteristic of the adoptees' biological families. Knowledge of the parent-child relationship has been useful in understanding the role that familial variables play in predicting adult criminality. Research suggests that inappropriate discipline, poor parental supervision, attachment to parents, and runaway behaviour are predictive of adult criminal conduct (Chockalingam, 1983; LeBlanc, 1994). A recent meta-analysis also confirmed that family rearing practices (i.e. lack of supervision and affection, conflict, and abuse) were predictive of recidivism (Gendreau, Little & Goggin, 1996). Lastly, there is some evidence to suggest that early paternal influences are stronger than maternal influences in determining the presence or absence of violent criminality (Yates, Beutler, & Crago, 1983).

It is often assumed that many sexual offenders have been sexually abused as children. While there is some evidence to support this assumption (Worling, 1995; Burgess, Hartman, & McCormack, 1987), a recent meta-analysis did not find a relationship between childhood sexual abuse and sexual recidivism (Hanson & Bussière, 1998).

For research investigating the relationship between family size or birth order and recidivism the findings have been inconclusive. While some researchers have concluded that number of siblings is not related to recidivism (Hart & Axelrad, 1941) others have found support for the predictive relationship between family size or birth order and criminal recidivism (Horton & Whitesell, 1979). Similarly, some evidence indicates that there is a relationship between extreme ordinal positions (i.e. firstborns and lastborns) and criminal behaviour (Shield & Grigg, 1944). Clearly further research is required.

Few longitudinal studies have examined the impact that marriage has on criminal behaviour. A recent review examining the relationship between marriage and criminality reported that attachment to spouse was associated with a decrease in the likelihood of adult criminality. Along the same lines, a recent meta-analysis revealed that being single was associated with sexual recidivism for sexual offenders (Hanson & Bussière, 1998). Further, maintaining an active family interest while incarcerated and establishing a mutually satisfying relationship after release were associated with decreases in reoffending (Wright & Wright, 1992).

Various family factors (e.g. family psychopathology, quality of parent-child relationships, experiences of childhood victimization, marital status and the quality of the relationship) have been implicated as potential predictors of criminal recidivism among adults. Clearly, much remains to be learned about whether family life can alter a delinquent criminal career and can buffer against criminogenic influences in adulthood.

This report also provides recommendations for the enhancement of marital and family assessment strategies, as well as future investigations into recidivism among adult criminals. The report concludes with a description and critique of some of the instruments frequently relied upon for the measurement of adult criminal recidivism.

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INTRODUCTION

Criminality is viewed as a complex phenomenon involving multiple biological, sociological, psychological, and situational antecedents (Eronen, Hakola, & Tiihonen, 1996; Moffitt, 1987; Spellacy & Brown, 1984). There is substantial evidence that a wide range of demographic (e.g., age at first offence, sex, race, social class), family (e.g., sibling size, birth order, father absence), and individual factors (e.g., psychopathology) are correlated with patterns of criminal activity (Marsh, Clement, Stoughton, & Marckioni, 1986; Webb, Hoffman, Wakefield, & Snell, 1976). Consequently, predicting criminality or even understanding fully its antecedents has been an enormous challenge among correctional workers, forensic scientists, and clinicians throughout history.

According to Bromberg and Berrian (1973), to the criminal lawyer, the psychiatrist, and the penologist, the recidivist constitutes the largest criminal statistic and tends to be the criminal least responsive to rehabilitation. Issues related to the probability of recidivism have been a matter of both practical and scientific concern for many years (Mandelzys, 1979). While it remains unclear whether factors explaining the onset of offending are the same ones as those accounting for the continuation or termination of the adult criminal career, comparatively few studies have examined these issues in detail (Ouimet & LeBlanc, 1996). In fact, other than offence history, very few variables have been clearly shown to predict recidivism. Despite there being little other than common sense and clinical judgement to assist decision-makers, frequently judgements are used by the judicial system in making decisions regarding sentence length, release, parole, institutional placements, and program assignments (Barbaree & Marshall, 1988; Bonta, LaPrairie, & Wallace-Capretta, 1997; Monachesi, 1950; Spellacy & Brown, 1984). The degree to which choices are accurately made determines not only the effectiveness of any treatment program in achieving the desired results, but also the manner in which the community is safeguarded against predatory individuals. The question has become which factors in the offenders' backgrounds and personalities should be given weight in making these different decisions (McWilliams, 1975). The main purpose of the present report is to review marital and family variables relevant to adult criminal recidivism.

The extent of recidivism among convicted offenders released to the community is a persistent topic of public concern (Romero & Williams, 1984). The procedures involved and information used in making decisions are of the utmost importance in the administration of criminal justice and determine the extent to which the objectives of correctional and rehabilitative programs will be achieved (Monachesi, 1950). Finding ways of detecting persons likely to repeat offending would make possible both the intensive study of their problems in relation to society, as well as assist in the development of rehabilitative treatments (Blackler, 1966).

Definition of Adult Criminal Recidivism

Much of the confusion in the research literature can be attributed to the numerous differences in defining and measuring adult recidivism over jurisdictions and across studies. Broadly defined, the recidivist is marked a social and/or moral failure by our courts, criminal subcultures, and correctional institutes (Bromberg & Berrian, 1973). More specifically, the recidivist is any person who has been convicted more than once in the criminal courts, and is likely to reappear there as a chronic offender (Bromberg & Berrian, 1973; Chockalingham, 1983; Romero & Williams, 1984). The measure of an adult's criminal activities typically consist of the number of convictions over the age of 18 as listed within the official records of the National Police Board (Stattin & Romelsj, 1995).

Although the majority of previous investigations have adopted this legalistic definition of recidivism, serious objections have been raised against the use of conviction records when investigating recidivism. Firstly, not all criminal behaviour results in an arrest (Boudouris, 1984), and secondly, when arrests are made, not all those arrested subsequently get convicted (Romero & Williams, 1984). As a result, this approach tends to substantially underestimate rates of recidivism. It is assumed that arrests most closely reflect actual criminal activity and thus by using arrests as a measure of recidivism, other factors such as the performance of the criminal justice system have not confounded the construct under investigation (Boudouris, 1984). However, by using arrests, the researcher violates the presumption of innocence principle, and must make other decisions about whether or not all arrests, including minor offences, will be considered. Using (re)arrests alone may be influenced by non specific factors such as neighbourhood, race, or police vigilance (Martin, Cloninger, & Guze, 1978).

Regardless of one's adopted definition, choices must be made as to the data source, criterion behaviour, and scale components. Data sources typically include self-report, observation by significant others, local agency follow-up, and police information systems (Wormith & Goldstone, 1984). Criteria of recidivism for Martin *et al.*, (1978) included severity and persistence of criminality. Recidivists were divided into either a "recidivist" category which required a person have a rearrest, or a "serious recidivist" category which comprised people whose freedom was significantly deprived as a sanction. Similarly, McNamara and Andrasik (1982) defined recidivism as either the commission of a technical parole violation or the recommission of a new crime that resulted in further sentencing of the parolee.

Rates of North American Adult Criminal Recidivism

Although many persistent offenders appear to eventually abate on their own, a large group of others seem unable to adjust to non-criminal life (Angliker, Cormier, Boulanger, & Malamud, 1973). In the 1967 President's Commission Report, it was stated that a striking number (approximately 30%) of convicted offenders of common serious crimes of violence and theft would continue offending and be reimprisoned within five years (Kaplan, 1975). Others have reported recidivism rates as high as 60% or 70% and occurring as early as three years following the release of offenders from incarceration (Bromberg & Berrian, 1973; Furby, Weinrott, & Blackshaw, 1989; Needels, 1996). Programs with court mandated clients such as perpetrators of wife abuse have reported recidivism rates at around 30% at follow-up periods varying from six months to one year (Shepard, 1992).

It may be that some of the discrepancy and large variations in recidivism rate calculations are a result of a combining first offenders with offenders who have a longer criminal history. Various studies comparing recidivism rates in first offenders and those with past convictions have found rates ranging from 10% to 21% and 33% to 71%, respectively (Grubin & Wingate, 1996). Another explanation for the lack of consensus among researchers regarding recidivism may stem from the diversity in measurement of the phenomenon. Nevertheless, in the absence of better criterion measures, recidivism rates will continue to attract the attention of judges, policy makers, clinicians, and researchers (Furby *et al.*, 1989).

Statement of the Problem

Despite the many contrasting methods employed to predict the likelihood of recidivism, all of the research conducted to date appears to be founded on the assumption that criminals can be classified into stable categories of emotional, psychological, and social characteristics, and that they tend to react alike in similar situations (Monachesi, 1950). Knowledge of the factors related to recidivism could lead to the provision of important information to potential victims, as well as assist in the design and implementation of treatment programs for high-risk repeat offenders (Hamberger & Hastings, 1990). Yet, after decades of investigating adult criminal recidivism, what do we really know and understand about its prediction and subsequent prevention and treatment?

The present summary is expected to contribute to the existing base of knowledge in that it comprehensively reviews the empirical results of numerous recidivism studies. Specifically, the primary aim of the review is to present a summary of the prevalence and nature of marital and family problems within adult criminal populations. A secondary objective is to describe and critique some of the instruments more frequently relied upon for the measurement of adult criminal recidivism (refer to Appendix A). The report concludes with recommendations for the enhancement of marital and family assessment strategies, as well as future investigations into recidivism among adult criminals.

Search Procedure and Criteria for Study Inclusion

A thorough search was undertaken in order to identify and locate existing publications of adult criminal recidivism. In addition to searching books, articles, conference papers, and technical reports, the computer databases of PsychInfo, HealthGate, Medline, and the National Criminal Justice Reference System (NCJRS) were examined. Search terms such as criminal recidivism and family, crime and family, crime and marriage, crime and prevalence of family problems, family variables and crime, and family assessment instruments were applied in order to locate published materials on the topic under investigation.

For this review, reports needed to include a theoretical discussion and/or empirical findings of an investigation of criminal recidivism. Of specific interest were studies that focused on the prediction of criminal recidivism, developmental and familial life history variables, and assessment instruments of recidivism. Although of increasing interest to researchers, men have been found to commit about five times as many crimes as women (Robertson, Bankier, & Schwartz, 1987) and the study of criminal activity and repeat offending among women has been relatively rare. Accordingly, the present review is primarily concentrated on adult male criminal recidivists.

In order to understand more clearly the type of studies located and those included in the present narrative review on recidivism, Table 1 presents a list of the study characteristics that were coded. As shown in Table 1, studies were classified according to type of report (theoretical/narrative or empirical), year of study, country of study, number of investigators/authors, gender of primary investigator/author, and institutional affiliation of primary investigator/author examined. Table 2 includes family or marital variables discussed in the studies. Table 3 displays the characteristics coded for in the empirical investigations only. These factors included, total sample size, presence of a contrast group, sampling method employed, assessment method used, and levels of statistics utilized. Finally, Table 4 presents the names of the assessment measures used in the empirical studies.

Coding Results

A total of 238 studies were reviewed for their theoretical and methodological applications, as well as the empirical results obtained. Of these, 193 (81%) were empirical studies and 45 (19%) were classified as narrative or theoretical papers. Based on the year of the studies reviewed, it is clear that many of the studies (n = 83; 35%) reviewed were published between 1981 and 1989, followed by 70 studies (29%) between 1990 and 1997, 42 (18%) between 1971 and 1979, and 24 (10%) between

1962 to 1969. Although fewer in number, 19 (8%) studies reviewed were found in publications spanning as early as 1937 through to 1959.

As can be seen in Table 1, the studies reviewed in the present report came from a variety of countries. Nonetheless, the vast majority were from North America (192; 81%), with 147 (62%) studies derived from the United States and 45 (19%) from Canada. While this strong North American bias may be a result of the convenience associated with accessing these studies over European or other foreign research works, it may be a reflection of the North American criminal justice approach, focus on prevention, and growing concern over recidivism and its associated human and financial costs to society. On a more specific level, 90 (38%) of the papers were written and studies conducted by one investigator, 76 (32%) by two authors/investigators, 47 (20%) by three authors/investigators, and 25 (11%) by four or more authors/ investigators. The majority of the primary authors/investigators were male (144; 61%) rather than female (39; 16%), with it not being possible to confidently identify the gender of the primary author/ investigator in 55 (23%) of the studies. Moreover, of those who published papers on the topic of criminal recidivism, research among 157 (66%) originated from universities, 45 (19%) from the government, and 9 (4%) from foundations. From these results, it seems that the area of criminal justice and investigation is still primarily male and university dominated.

Table 1: Study Characteristics of Articles Located and Reviewed on Recidivism

Characteristics	Frequency of Occurrence (N = 238)	
Type of Report	Theoretical/Narrative	45
	Empirical	193
Years of Study	1937	1
	1940-1949	8
	1950-1959	10
	1960-1969	24
	1970-1979	42
	1980-1989	83
	1990-1997	70
Country of Study	Australia	2
	Bangladesh	1
	Canada	45
	Denmark	4
	England/United Kingdom	11
	Finland	5
	Germany	1
	India	6
	Italy	1
	Netherlands	1
	New Zealand	2
	Norway	2
	Scotland	1
	Slovenia	1
	Sweden	4
	United States	147
	Unknown	4
Number of Investigators/Authors	One	90
	Two	76
	Three	47
	Four	14
	Five or More	11
Gender of Primary Investigator/Author	Men	144
	Women	39
	Undifferentiated	55
Institutional Affiliation of Primary Investigator/Author	University	157
	Foundation	9
	Government	45
	Independent	1
	Not Reported	26

Table 2 presents the results from coding the studies reviewed on the family and marital variables examined. Although frequencies were not calculated, all unique and common variables focused on by narrative and empirical documents were recorded. Studies on recidivism have looked at variables related to family and marriage, ranging from family size and birth order, to family tension and quality of parent-child relationships.

Table 2: Types of Family or Marital Variables Examined in Publications on Recidivism

- Abandonment
- Abortion
- Adolescent pregnancy and marriage
- Adoption
- Attachment
- Birth order
- Child care
- Child abuse
- Cohabitation
- Discipline/Punishment
- Dominant father
- Dominant mother
- Family Tension
- Family size
- Family structure
- Family dissension/disputes
- Family violence
- Family relations/interactions
- Father absence
- Father-son relationships
- Frequency of moves
- Incest abuse
- Jealousy
- Level of conflict
- Marital status
- Marital history
- Marital satisfaction
- Marriage stability
- Maternal self-confidence
- Maternal employment
- Mother-son relationships
- Neglect Abuse
- Number of dependents
- Number of remarriages
- Parent criminality
- Parent-adolescent conflict
- Parental illness
- Parental death
- Parental occupation
- Parental divorce
- Parental psychopathology
- Parental separation
- Parental discord
- Parental hospitalization
- Parenting style
- Parents drinking
- Poverty
- Prenatal care
- Rejection
- Resistance to parental authority
- Sexual aggression
- Sibling criminality
- Socioeconomic status
- Spousal abuse
- Substance abuse
- Type of home upon release
- Unrealistic maternal idealizations

A further breakdown of the characteristics of the 193 empirical studies on recidivism reviewed in the present report is displayed in Table 3. The majority of the studies (n = 147; 77%) comprised samples of 100 or more, while 43 (22%) had samples ranging from 26 to 99 and 3 (2%) studies included sample sizes between 13 to 25 people. This suggests that the majority of studies conducted on recidivists are relatively large. The most common sampling method to obtain a sample for recidivist studies was convenience sampling (n = 148; 77%); other approaches included simple random sampling (n = 16; 8%), dimensional sampling (n = 7; 4%), stratified random sampling (n = 4; 2%), and cluster sampling (n = 1; 1%). These results reflect the convenience among researchers to measure captive persons, as well as the bias of studying recidivists who are institutionalized or identified through the judicial system rather than in the general population.

Regarding research methodology, more than double of the studies on recidivism did not include a contrast group (n = 132 studies or 68% did not have a contrast group of non-recidivists versus n = 63 studies or 33% included a contrast group). Moreover, 66 (34%) of the studies were retrospective in nature, 38 (20%) were longitudinal studies, and 19 (10%) were retrospective-longitudinal studies. These methodological approaches are not surprising given that the phenomenon under investigation is likely best studied from a life-span developmental approach. Related to this, many of the studies included assessments of recidivism from multiple sources. Table 4 presents the actual names of the assessment measures used in the empirical studies of recidivism reviewed in the present report. As shown in Table 4, the most common approach was to obtain recidivism information from an examination of archival records from police or other institutions (n = 96), followed by interviews (n = 53), self-report assessment measures (n = 40), standardized questionnaires (n = 12), observations (n = 11), and rating scales (n = 9). Given the quality of data gathered, the highest level of statistical analysis for many of the studies involved univariate analyses (n = 91; 47%). Multivariate analyses were the highest level of statistical analysis for 65 (34%) of the studies, while frequencies and structural equation modeling were the highest level conducted in 35 (18%) and 2 (1%) of the studies respectively.

Having clarified the characteristics of the studies reviewed and the resultant associated limitations and constraints of the present document, a discussion of the existing research predicting recidivism among adult criminals is presented.

Table 3: Characteristics Coded for Empirical Investigations of Recidivism

Characteristics	Frequency of Occurrence (N=193)	
Total sample size	13 to 25	3
	26 to 50	12
	51 to 70	13
	71 to 100	18
	100 or More	147
Contrast group employed	No	132
	Yes	61
Sampling method utilized	Simple Random	16
	Stratified Random	4
	Systematic	6
	Convenience	148
	Not Reported/Identified	19
Research Design Used	Longitudinal	38
	Retrospective-Longitudinal	19
	Retrospective	66
	Not Reported	70
Assessment Method Used*	Interview	53
	Standardized Questionnaire	12
	Rating Scales	9
	Observation	11
	Self-Report.	40
	Records/Archives	96
	Not Reported	34
Highest Level of Statistics Used	Frequencies	35
	Univariate.	91
	Multivariate	65
	Structural Equation Modelling	2

* May not add up to 193 given that more than one assessment procedure may have been used per empirical investigation.

Table 4: Assessment Measures utilized in Empirical Investigations of Recidivism

- Adolescent Perception Survey
- Akman & Normandeau Scale
- Alcohol Dependence Scale
- Army Beta
- Base Expectancy Score
- Behaviour Problem Checklist
- Ben Sex-Role Inventory
- Bentler Inventory of Heterosexual Activity
- Blishen Scale
- California Achievement Test
- California Psychological Inventory
- California Test of Personality
- Canadian Recidivism Index (ROI)
- Canadian Recidivism Index (CRI)
- Conflict Tactic Scale (CTS)
- Criminal Scale
- Delinquency Scale
- Drug Abuse Screening Test
- EAS Temperament Survey
- Family Adaptability and Cohesion Evaluation Scales-II
- Family Relationship Questionnaire
- Habitual Criminal Scale
- Hogans Empathy Scale
- Hutt Adaptation of the Bender-Gestalt Test
- Impact of Event Scale
- Internal-External Locus of Control Scale
- Junior Maudsley Personality Inventory
- Krawiecka Scale
- Leiter Recidivism Scale
- Level of Supervision Inventory (LSI)
- LIFE – Test
- Lykkenn Anxiety Scales
- Manitoba Risk-Needs Classification Instrument
- Maudsley Personality Inventory
- Millon Clinical Multiaxial Inventory
- Missouri Peer Relations Inventory
- MMPI
- Moos Family Environment Scale
- Multidimensional Personality Questionnaire
- Normlessness Scale
- Otis IQ
- Pantons Prison Adjustment Scale and Outcome Prediction Scales
- Personality Inventory of Eysenck and Eysenck
- Piers Harris Childrens Self-Concept Scale
- Porteus Maxes
- Present State Examination
- Proportional Hazard Survival Analysis
- Prosocial Behaviour Questionnaire
- Psychopathy Checklist & PCL-R
- Raven's Matrices Test
- Rebellious Scale
- Recidivism Prediction Scale Score
- Release Outcome Scale
- Rogers Behaviour Scale
- Rorshach Tests
- Rutter Behaviour Problem Checklist
- Salient Factor Score (SFS81)
- Self-Esteem Inventory (SEI)
- Self-report Delinquency Inventory
- Sibling Inventory of Differential Experience
- Statistical Index of General Recidivism Instrument
- Statistical Prediction of Violent Recidivism Instrument
- Tennessee Self-Concept Scale
- The Criminal Sentiments Scale
- Thematic Apperception Test
- Unrevealed Differences Questionnaire-R
- Violent Risk Appraisal Guide (VRAG)
- WAIS
- Wisconsin Juvenile Probation and Aftercare Risk Instrument

PREDICTION OF CRIMINAL RECIDIVISM AMONG ADULTS

Researchers are almost unanimous in their conclusion that there is a lack expertise in predicting criminal first time and repeat offenders (Quinsey, Rice, & Harris, 1995). Nonetheless efforts have continued through investigations of underlying factors related to criminal repetition. As early as 1937, it was suggested that identified variables of unfavourable home or neighbourhood environment, poor school and work adjustment, association with older criminals, lack of economic opportunities, and individual psychopathology could usefully predict criminality (Thompson, 1937). However, having recognized that not all those from high-risk backgrounds become criminals or that some from favourable backgrounds do become criminals, has undermined the confidence we have in the predictive power of these variables. Perhaps the relationship between criminal recidivism among adults includes a suppressor variable not yet identified or associated with criminal careers. In effect, it has been argued that many variables provide circular explanations for offending behaviour and therefore are of limited use in predicting recidivism (Grubin & Wingate, 1996). A closer look at the demographic and personal variables researched to date will follow.

Demographic Predictors (Age, Race, Socioeconomic Status, and Intelligence)

Among the demographic factors shown to be related to offence and recidivism rates are age, race, employment, and geographic area. Both the age at first offence and the number of prior arrests are good predictors of rearrest in both juvenile and adult offenders (Furby *et al.*, 1989). The environment and opportunities to which offenders return seem likely to play a role in recidivism rates. Recidivism is likely to be lower when there exist an extensive social service network that includes postrelease support groups and job placement.

Some researchers have argued that there is a "burnout" phenomenon that occurs among adult criminal offenders (Cloninger & Guze, 1978; Hoffman & Beck, 1984; Wright & Wright, 1992). Specifically, that there is an age after which recidivism rates diminish significantly, even for previously recidivistic offenders. Support for this claim derives from studies that have found that age at release from prison is associated with post-release outcome; that older releasees show lower recidivism rates than younger ones. In order to determine the magnitude of the statistical association between age at release and recidivism, Hoffman and Beck (1984) argued that effects of other variables known to be associated with recidivism (e.g., prior criminal record) must be controlled.

To examine whether age at release adds to the predictive information of recidivism, a sample of 3,954 prisoners released to the community during 1970 to 1972 were combined with a sample of 2,333 prisoners released to the community during 1978 (Hoffman & Beck, 1984). A positive, statistically significant bivariate association was found between age at release and favourable post-release outcome [F(df = 4, 6281) = 15.6, p<.001]. When prior criminal history was considered, an even stronger association between age at release and favourable post-release outcome was found [F(df = 4, 6281) = 45.6, p<.001]. Prisoners aged 41 and older at release demonstrated favourable post-release outcome rates, while prisoners aged 25 and younger at release showed a less favourable post-release outcome rate. No statistically significant difference was found for the groups aged 26 to 30, 31 to 35, and 36 to 40 at release. Although not all variables possibly influencing the association between age at release and post-release outcome were controlled, Hoffman and Beck (1984) concluded that their results support the existence of an age related "burnout" phenomenon.

However, contradictory evidence was found for this phenomenon by Harris, Rice, and Cormier (1991) who followed a group of 176 psychopathic and non psychopathic male graduates of a maximum security therapeutic community program for ten years. The men comprised an unusually high-risk sample, most of whom had already been violent. Of the 176 subjects, 169 had an opportunity to recidivate and of these, 40% of the total and 77% of the psychopaths repeated a violent offence. It was possible to predict outcome with considerable accuracy using combinations of childhood history, adult history, index offence, and institutional or program variables. Still, Harris *et al.* (1991) found that the Psychopathy Checklist alone performed at least as well as any combination of variables and also improved upon the prediction based on criminal history variables. Given that psychopaths continued to recidivate at a higher rate than non psychopaths even beyond 40 years of age, the researchers argued against a burnout phenomenon for violent offenders.

Ouimet and LeBlanc (1996) tested two opposing models, the maturational model which specifies that crime will diminish during young adulthood regardless of life experiences, and the situational model which predicts that early adulthood life experiences will have a true casual influence on continuation-desistance from criminality. The sample of 238 men who had been juvenile offenders and now in their thirties were interviewed and compared with the population of the 428 who were interviewed as juveniles (Ouimet & LeBlanc, 1996). In the early 1990s, 238 subjects from the original sample completed a retrospective interview that covered the period from 18 to 31 years of age. In the first few years of adulthood, 25% to 28% of the men were active in the crime of burglary, but this percentage diminished steadily thereafter. At 31 years of age, only 5% were found to be active in this type of crime. According to the results, the prevalence of participation in crime by former juvenile delinquents during their young adulthood was relatively constant from age 18 to the mid-twenties. However, after age 25, fewer and fewer men engaged in crime. Less than 20% said they remained criminally active at the beginning of their thirties. Based on these trends it appears that age is inversely related to criminal activity, thus showing that there is a strong and significant effect of maturation that is independent of the exposure to anti-criminal institutions such as family or work. Life experiences such as marriage, procreation, work, and economic dependence are not statistically associated with participation in crime during young adulthood. Before age 22, a weak but positive relationship was found between living with a mate and participation in crime. Then starting at age 22 a negative relationship between living with a mate and criminal activity emerged. Thus, those young adults most inclined to continue offending tended to live with a mate at an earlier age than the others. Ouimet and LeBlanc (1996) suggested that cohabitation and marriage tend to reduce criminal activity from the mid-twenties on. The relationship between work and crime was negative, significant and relatively strong for almost all ages. This variable was one of the best predictors of the continuation of criminal activity.

In an official records follow-up study of 1,071 Norwegian male sexual offenders, Grunfeld and Noreik (1986) investigated rates of sexual offence relapse. Differences in age of the offenders were found to be related to type of sexual offence. While most of the rapists were in their late teens or early twenties, the incestuous offenders were in their late thirties or forties. The most common tendency was for offenders to repeat the original offence, with rapists being the most likely to reoffend (i.e., more than 20% reoffended at least once during the observation period). In fact, it took rapists only 14 months before they reoffended sexually from the time of their first felony. This was in stark contrast to abusers of minors who did not recidivate until 46 months later and for those charged with obscene conduct who recidivated 60 months after their first felony. Overall, a large number of sexual offenders had a prior and subsequent criminal record, mostly of crimes of profit and violence.

In response to the lack of research conducted on the prediction of recidivism for different groups of aboriginal people, Bonta, LaPrairie, and Wallace-Capretta (1997) followed up on 903 male and female offenders 3 years after their probation terminated. Information on 513 (56.8%) non-aboriginal and 390 (43.2%) aboriginal offenders was drawn from a computerized databank in Manitoba. Except for the rate of spousal abuse, aboriginal offenders differed from the non-aboriginal offenders on almost all the personal demographic and criminal history variables. Specifically, aboriginal offenders were less likely to be male (2 = 6.70, p<.01), were more likely to be unemployed (2 = 35.78, p<.001), and less educated (t = 10.78, p<.001). With respect to criminal history, aboriginal offenders were more likely to have histories of prior convictions (2 = 5.55, p<.05), probation breaches (2 = 10.30, p<.001), and convictions for a violent crime (2 = 10.15, p<.01). Within 3 years of completing community supervision, 55.6% were reconvicted of a new offence or technical violation. The aboriginal offenders were found to reoffend at a higher rate than the non-aboriginal offenders (65.9% vs. 47.8%, 2 = 29.53, p<.001). The major finding of Bonta *et al.* (1997) was that almost all the individual items that predicted risk recidivism for non-aboriginal offenders predicted recidivism for the aboriginal group (except for family/marital, mental ability, and academic/vocational variables). This led the researchers to conclude that the risk factors are similar for aboriginal and non-aboriginal offenders, and more generally, that risk-needs factors are the same for groups regardless of culture and race.

Other demographic variables such as intelligence quotient (IQ) and socioeconomic status (SES) have also been identified as valuable predictors of recidivism. Barbaree and Marshall (1988) examined selected demographic and offence history variables and deviant sexual arousal as predictors of reoffence in a group of 35 untreated child molesters. Over the whole sample of 35 untreated non-familial child molesters, 43% reoffended at least once during the follow-up period. While months at risk during follow-up was not significantly related to recidivism (r(33) =.28, n.s.) or number of reoffences (r(33) =.18, n.s.), age, IQ, and SES of the offender were. Three factors were identified which accounted for over 20% of the variance in recidivism and 30% of the variance in the number of reoffences. Specifically, the deviance quotient and a number of important offence history variables showed high loadings on a Sexual Deviance Factor, while IQ and SES showed high loadings on a Social Status Factor, and offender age, victim age, and number of previous victims showed high loadings on a Offender Age Factor. Proving to be a less effective predictor, the Social Status Factor was marginally significant as an individual predictor of number of reoffences (F(1,31)=3.46, p=.08). Barbaree and Marshall (1988) suggested that this may reflect the extent of personal resources available to the offender to cope with everyday problems and with sexual urges and temptations. Moreover, Social Status may have been a less strong predictor because it interacted with circumstantial variables and historical events that were not appropriately measured or controlled in the study.

Employment Record

It is assumed that the way a person occupies his time should influence the extent of his participation in crime. Although work seems to be incompatible with a criminal lifestyle, there is little empirical evidence to support such a relationship (Ouimet & LeBlanc, 1996).

According to economic models, when individuals are deciding whether or not to commit a crime, they consider the expected payoffs from the crime and the expected costs from conviction (Needels, 1996). Because the legal-sector earnings are slow to materialize whereas gains from crime are often immediate, many criminals do not seek legitimate avenues of employment. Using a unique data set containing 17 years of criminal activity and 9 years of earnings for 1,176 men released from prison, Needels (1996) examined how human capital characteristics such as race, education, age, and criminal history affected employment rates and earnings levels for prison releasees. Approximately

83% of the sample were rearrested at some point over 17 years, with 61% reincarcerated during this time. Labour market participation rates and earning levels were extremely low. While race and education did not affect employment rates, older individuals had lower employment rates even after variables related to labour market attachment were controlled. Moreover, the amount of time incarcerated was not found to significantly affect earnings in the community (Needels, 1996).

Other studies examining these relationships have highlighted the link between providing work skills and experience among offenders in order to improve postrelease employment adjustment. Maguire, Flanagan, and Thornberry (1988) examined whether participation in prison industry was associated with lower recidivism among offenders. Chronological codings of 896 (399 industry participants and 497 non-participants) inmates' criminal careers was conducted, beginning with the first arrest recorded and all post prison arrests for inmates who had been released. The data showed that industry participants were older at the time of commitment than the comparison sample of non-participants, they served more time in confinement, and incurred lower annual rates of prison disciplinary violations while incarcerated. Industry participants were also more likely to have been employed during the month prior to arrest and were less likely to have records of preprison drug use than were non-participants. Maguire *et al.* (1988) did not find any systematic differences between the groups in terms of race, commitment offence, prior felony arrest, preprison educational achievement, occupation, military experience, or marital status. Estimates of recidivism suggested that industry-employed inmates had more favourable outcomes, with 29% of industry participants and 34% of non-participants reoffending upon release (2 = 2.37, df = 1, p =.123). However, when intergroup differences were taken into account in multivariate analyses, differences in recidivism were minimal and not statistically significant, suggesting no evidence of a separable and unique contribution of prison industry participation in determining recidivism. Maguire *et al.* (1988) explained their findings as a result of socialization effects. By the time the participants arrived in the industry program, they were already adults who had completed the formative experiences of family, school, and occupational experience. Moreover, both industry participants and nonparticipants had likely passed through multiple "filters" of criminal justice processing.

Juvenile Delinquency and Criminal History

While various demographic variables of age, employment, and SES are admittedly related, Orsagh and Chen (1988) considered the probability of offender recidivism to be functionally related to the time served in prison as a consequence of an offence. The data used related to 1,425 prisoners released from a North American prison, and recidivistic outcomes were measured at the end of the first and second years subsequent to their release. The researchers found support for their hypothesis that time served affects postprison recidivism rates. For burglars, recidivism was found to be functionally related to time served, both for the class as a whole and for younger offenders. On average, time served increased the probability of robbers recidivating, suggesting that length of imprisonment did not serve as a deterrent; the effect was particularly strong for older offenders. The different results obtained were expected since the recidivistic effect of longer prison sentences is likely complex and offender specific. According to Orsagh and Chen (1988), offenders who find the prison experience worse than they expected or who deeply regret the loss of socioeconomic well-being engendered by the prison experience are less likely to return to prison if they receive longer prison sentences. On the other hand, offenders who become increasingly estranged from the legitimate world as their sentence lengthens are more likely to recidivate if their sentences are longer. On a practical level, the results of this study highlight the importance of providing different average sentences for different offender classes in order to reduce recidivism. From a research perspective, these results identify the relationship between prior criminal convictions and repeat offending in the future.

Even though this variable may do little more than distinguish between those who are and are not willing to continue behaving illegally despite the risk of apprehension, it is believed that the most reliable predictor of future behaviour is past behaviour (Grubin & Wingate, 1996). Longitudinal studies made of the careers of adult offenders regularly show the importance of juvenile delinquency as a forerunner of adult crime, supporting the claim that the earlier a juvenile is arrested or brought to court for an offence, the more likely he is to carry on criminal activity into adult life (Borduin, Mann, Cone, Henggeler, Fucci, Blaske, & Williams, 1995; Kaplan, 1975).

Stattin and Magnusson (1989) prospectively studied the relation between early aggressive behaviour and later delinquent activities among 1,027 subjects (517 boys and 510 girls). Aggressiveness was measured by teacher ratings at ages 10 and 13, and delinquency was measured as registered lawbreaking up to age 26. Although aggressiveness was not predictive of later crime for girls until they reached the age of 13, a strong connection was found between high ratings of aggressiveness at ages 10 and 13 and adult delinquency for boys. In fact, many of these boys later committed violent crimes and damaged public property.

Maintaining a history of prior convictions in adulthood has been a related factor to delinquent behaviour and consistent predictor of recidivism. In a study of 217 criminal men, Guze (1964) found that the single most important variable for predicting recidivism among convicted criminals was the extent of their prior criminal experience. Other variables examined, such as family history, parental home variables, and clinical psychiatric illness, showed no significant effect upon recidivism. Guze (1964) suggested that while these variables may be associated with an increased risk of becoming a criminal, they may not determine the subsequent criminal career of a person once they have become a criminal.

Consistent with most other areas of criminal behaviour, studies investigating sexual recidivism have also found that previous criminal history serves as a sound predictor. Quinsey, Rice, and Harris (1995) combined data collected on 128 sex offenders who had been assessed for an average of 59 months at a maximum security psychiatric facility. Twenty-eight percent were convicted of a new sex offence and 40% were arrested, convicted, or returned to the psychiatric facility for a violent and/or sexual offence. Although rapists were more likely to recidivate than child molesters, this may be an artifact of closer supervision of child molesters over rapists. For example, child molesters were significantly more likely to have remained in the institution for treatment. They were also less likely to have antisocial histories, to be diagnosed as personality disordered, and to have fewer prior criminal convictions than sex offenders of adults or children (Quinsey *et al.*, 1995). Among the factors that significantly differentiated among sexual recidivists were previous record of sexual offences and previous general criminal history.

Romero and Williams (1984) analysed prior arrest records and subsequent arrests for 231 offenders over at least a ten-year period. The findings indicated that the sample studied had an extensive prior criminal record. Overall, 73% of the sample of convicted sex offenders placed on probation were known to have had at least one prior arrest for any offence. Of those with at least one prior arrest, 36% had at least one prior sex offence arrest. Of the 231 in the total sample of sex offenders studied, 46% had at least one prior non-sex arrest. The most significant predictors of future arrests for any type of offence were found to be income, age, and number of prior arrests. Income significantly differentiated ($p<.05$) among the sample, with those earning less money being associated with recidivism. Those who were younger when they were arrested for the sex offence were more likely to be rearrested ($p<.05$). Still, the variable most strongly associated ($p<.001$) with a new arrest for a sex offence was the prior sex arrest rate per year. According to Romero and Williams (1984), the data suggest that individuals with a history of sex offences and violence are more likely to recidivate over a long timespan than individuals with only one sex offence.

In an investigation of the predictive efficacy of archivally coded variables assessing reoffence risk, follow-up data on 111 child molesters discharged from a treatment centre were used (Prentky, Knight, & Lee, 1997). While no evidence was found for the utility of victim sex as a predictor of reoffence, other predictors were identified. Specifically, degree of sexual preoccupation with children, paraphilias, and number of prior sexual offences were found to predict sexual recidivism. On the other hand, juvenile and adult antisocial behaviour, paraphilias, and low amount of contact with children were the variables found to predict non-sexual victim-involved and violent recidivism. Prentky *et al.* (1997) suggested that a comprehensive risk assessment of child molesters must extend the assessment of predictors beyond criminal history and include a full range of variables in order to capture the state and trait variables of a heterogeneous sample of offenders.

A similar conclusion was reached by another group of researchers. Hall and Proctor (1987) investigated the utility of criminological variables as predictors of recidivism among 342 male sexual offenders. Of the 139 subjects who recidivated, 49 were re-arrested for exclusively sexual offences, 49 for exclusively non-sexual offences, and 41 for a combination of sexual and non-sexual offences. Hall and Proctor (1987) found significant relations between previous arrests for sexual offences against adults and re-arrests for sexual offences against adults [R = .35, F(1,340) = 48.78, p<.0001], with non-sexual violent re-arrests [R = .39, F(1,340) = 59.15, p<.0001], and with non-sexual non-violent re-arrests [R = .23, F(1,340) = 19.44, p<.0001]. Significant relationships were found between previous arrests for sexual offences against children [R = .12, F(1,340) = 5.16, p<.03], with re-arrests for sexual offences against adults [R =.24, F(1,340) = 20.70, p<.0001], and with non-sexual violent re-arrests [R = .22, F(1,340) = 16.45, p<.0001]. Significant relationships were also found between previous arrests for non-sexual violent offences and re-arrests for sexual offences against adults [R = .26, F(1,340) = 23.67, p<.0001] and with non-sexual violent re-arrests [R = .21, F(1,340) = 15.84, p<.0001]. Significant relations of previous arrests for non-sexual no-violent offences were found with non-sexual non-violent re-arrests [R = .16, F(1,340) = 8.59, p<.004]. The results indicated an apparent dichotomy among sexual offenders; sexual offenders against adults tend to reoffend on adult victims, whereas sexual offenders against children tend to recidivate against children. Moreover, the involvement of adult rapists in non-sexual criminal activity suggested that this crime may be symptomatic of a more generalized pattern of antisocial behaviour. Of the variables considered, the best single-predictor of re-arrests was arrests for sexual offending against adults, which explained 12% of the variance in re-arrests for sexual offending against adults and explained 15% of the variance in non-sexual violent re-arrests (Hall & Proctor, 1987). The researchers cautioned that although many of the relations were statistically significant, the magnitude of these relationships does not warrant the sole use of criminological variables for decisions regarding individual sexual offenders.

Substance Disorders and Individual Pathologies

The relationships between various substance-related and mental disorders and subsequent criminal activity have been the subject of much public and professional debate. While the public perceives major mental disorder as a risk factor for violence, the scientific evidence on the relationship is mixed (Rice & Harris, 1995). Because alcohol and psychoactive drug abuse are highly prevalent among offenders, some have focused on this as a possible predictor of recidivism (Ouimet & LeBlanc, 1996).

Rice and Harris (1995) examined the relationships among schizophrenia, psychopathy, alcohol abuse, and violent recidivism among a group of serious male offenders (N = 685). Of the total sample, 51% were coded as having had an alcohol problem, 24% were schizophrenic, and 22% were psychopaths. The conjoint frequency of schizophrenia and psychopathy was lower than expected [2(1,N = 587) = 17.29, p<.0001]. Schizophrenia was inversely related to violent recidivism [2(1,N = 587) = 18.86, p<.0001], while psychopathy [2(1,N = 587) = 42.21, p<.0001] and alcohol [2(1,N = 587) = 9.76, p<.005] were positively related to violent recidivism. Alcohol abuse was related to violent recidivism only among psychopaths. Similarly, the difference in recidivism between psychopaths and non-psychopaths was much larger among non-schizophrenics [2(1,N = 448) = 33.56, p<.0001 versus 2(1,N = 139) = 0.57, ns]. Among the sample of serious offenders, psychopathy proved to be more highly related to likelihood of violent recidivism than did alcohol abuse or schizophrenia. Schizophrenia was related to violent recidivism, but negatively so. Rice and Harris (1995) argued that psychopaths were the group at high risk for future violence, while persons diagnosed as having schizophrenia posed the least risk. Although comorbidity rates of schizophrenia and psychopathy, and of schizophrenia and alcohol abuse were very low, the comorbidity of psychopathy and alcohol abuse was high.

In a one-year follow-up assessment of a 16-week spouse abuse abatement counselling program, Hamberger and Hastings (1990) examined specific demographic and personality characteristics of 74 violence-free completers and 32 violence-repeating completers. Chi-square analyses indicated no statistically significant differences between the two groups on variables of race, employment, marital status, education, history of child abuse victimization, and history of witnessing maternal abuse. Significant differences did emerge between recidivists and non-recidivists on the variable of age. Hamberger and Hastings (1990) found recidivists were younger than non-recidivists (28.5 years old versus 33.7 years old, respectively; t(104) = 3.15, p<.002). Moreover, compared to non-recidivists, more recidivists were divorced or never married, reported pre-treatment alcohol problems with recurrent post-treatment violence (2 = 5.30, p<.025), and reported new and continuing alcohol problems post-treatment (2 = 34.4, p<.001).

Similar results were obtained by Shepard (1992) who examined recidivism among 100 male batterers following five years of community intervention. Sample characteristics included a mean age of 31.9, 85% were white, 31% reported having witnessed wife abuse in their family of origin, 24% reported being physically abused as a child, 37% were ordered by the court to complete a chemical dependency evaluation, 4% had been convicted of non-domestic assault in the past, and 15% had been convicted of a previous domestic assault. Forty percent of the men were identified as recidivists. A discriminant analysis function based on five variables (i.e., duration of abuse in the relationship, court ordered chemical dependency evaluation, chemical dependency treatment, child abuse victim in family of origin, and previous convictions for non-assault crimes) differentiated between recidivists and non-recidivists (Wilks' lambda = .81, Chi-Square = 19.27, p = .00). The function was most successful in predicting recidivists, with 66.7% being correctly classified, and 56.4% of non-recidivists being correctly classified. Shepard (1992) concluded that the results of the discriminant function suggested that characteristics of the batterer were more important in predicting recidivism than was the form of intervention.

Another study examined a group of 202 Swedish male citizens who registered as homeless and were followed-up for a three-year observation period (Lindelius & Salum, 1976). Rates of alcohol abuse and crime recurrence were found to be high among the sample. Few men were found guilty of serious and violent crimes (e.g., manslaughter, robbery with violence, or rape), as the majority of their offences tended to be minor. For 25% of the men, criminality started before the age of 20. Lindelius and Salum (1976) suggested that this is likely an age when alcoholism has not attained its maximum degree of severity. Moreover, because crime rates among alcoholics do not appear to increase with age, the association between alcoholism and criminality may not reflect a simple causal relation. Among those alcoholics who become criminal at an early age, both alcohol abuse and criminality may be manifestations of other factors which contribute to the development of a deviating behavioural pattern (Lindelius & Salum, 1976). It may be that one such factor includes specific personality disorders or individual pathologies.

According to Tiihonen and Hakola (1994), there are no firm epidemiologic data concerning psychiatric disorders associated with homicide recidivism. However, through their own study of all 13 homicide recidivists incarcerated in Finnish prisons or high-security hospitals, 85% were found to suffer from either severe alcoholism combined with personality disorder and 15% from schizophrenia. In addition to severe alcoholism and schizophrenia, common diagnoses were paranoid psychosis and paranoid personality disorders. These findings suggested that homicide recidivists tend to be almost always mentally ill.

Over a twelve year period, Eronen, Hakola, and Tiihonen (1996) studied a total of 1,649 homicide cases, 66% of which included exhaustive information from forensic psychiatric examinations. Data from reports of these examinations were analyzed to determine whether mental disorder and other factors were associated with homicide recidivism. Thirty-six homicide recidivists were identified from 1,089 cases; 24 of these were alcoholics, 23 had a personality disorder, and in most cases combined with alcoholism, 4 had schizophrenia and 2 had major depression. Homicidal behaviour was found to be 10 times more likely in men who had committed a previous homicide than in the general male population. While alcoholism increased the odds ratio of additional homicidal behaviour by about 13 times, schizophrenia increased the odds ratio more than 25 times. Eronen *et al.* (1996) found that during their first year after release from prison, male homicide offenders were about 250 times more likely to commit homicide than members of the general male population. Not only do the results suggest that the risk of repeat homicide is very high during the first year after release from prison, but also that numerous other psychological and substance-related pathologies are associated with this criminal behaviour.

Mandelzys (1979) related the severity of the most recent offence (Offence Severity Scale) and the probability of recidivism (California Base Expectancy Scale) to a number of social and background and psychometric variables in a sample of 457 incarcerated inmates in a Canadian federal institution. Multiple regression analyses indicated that when the group was considered as a totality, the most consistent relationships with both offence severity and probability of recidivism centered on the background variables (e.g., total number of arrests and first offence variables such as age, type of offence, and sentence). For the minor offenders (i.e., offences primarily against property), as both the sentence and the length of time served increased, so did the probability of recidivism. For the major offenders and murder groups (i.e., violence against person or property excluding sex offenders), the relationship was exactly the opposite, in that decreases in recidivism probability were related to longer sentences and longer periods of incarceration. For the sex offender groups the probability of recidivism was related only to the length of the sentence, but not to the total amount of time served out of the sentence. Although correlations with the largest magnitude accounted for no more than 25% of the total variance, Mandelzys' (1979) results indicate a relationship between psychopathology and reoffending. Specifically, the greater the degree of expressed psychopathology and the lower the intelligence, the greater the probability of recidivism.

A combination of factors, including behavioural, family history, and biochemical variables, and psychiatric diagnoses, were used to discriminate recidivists among 348 male criminals (DeJong, Virkkunen, & Linnoila, 1992). Violent recidivism in killers and attempted killers was most clearly associated ($p<.001$) with impulsivity of index crime and with a diagnosis of antisocial personality disorder or conduct disorder. Of those with an impulsive index crime, 38% were recidivists, compared with only 6% of the non-impulsives. Recidivists and non-recidivists differed on age ($t = 3.90$, $df = 124.6$, $p<.001$) and IQ ($t = 2.70$, $df = 246$, $p = .007$), with recidivists being younger (27 years old) and scoring lower on the Wechsler Adult Intelligence Scale (WAIS; IQ of 93) versus non-recidivists (33 years old and IQ of 98 on average). Alcoholism of the father and mother appeared to predispose toward violent recidivism, and a strong positive correlation was found between suicide attempts and violent recidivism (accounted for 15.6% of the variance in the discriminant analysis). Use of multiple factors to discriminate recidivists achieved a reasonable sensitivity only on the prediction of violent recidivism for arsonists. History of either a suicide attempt by the offender or alcoholism in the mother distinguished 77.3% of the violent recidivists, with a low false-negative rate but an unacceptable false-positive rate that exceeded 50% (DeJong, Virkkunen, & Linnoila, 1992).

Recidivism was determined over an average 6-year follow-up of 136 extrafamilial child molesters who had received phallometric assessment in a maximum security psychiatric institution (Rice, Vernon, Quinsey, & Harris, 1991). Thirty-one percent of the molesters were convicted of a new sex offence, 43% committed a violent or sexual offence, and 58% were arrested for some offence or returned to the institution. Those who were convicted of a new sex offence had previously committed more sex offences, had been admitted to correctional institutions more frequently, were more likely to have never married, had shown more inappropriate sexual preferences in initial phallometric assessment, and were more likely to have been diagnosed as personality disordered than those who had not. Rice *et al.* (1991) did not find behavioural treatment to affect recidivism.

Genetic and Physiological Predictors

Genetic and physiological variables have continued to be investigated as possible predictors of criminal behaviour and recidivism. Mednick and Kandel (1988) reported that perinatal complications have not been widely studied, perhaps because of the difficulties imposed by assessment and by the time span between the birth and subsequent violence (approximately 20 years). Among the two studies they did find related to this, it was found that indices of perinatal problems were associated with later violent rather than property crime. These findings are highly consonant with repeated reports of a high incidence of brain damage in violent offenders. Mednick and Kandel (1988) argued that a good proportion of street and home violence is a function of vulnerability brought on by less than optimal brain functioning.

In one of the first investigations to prospectively examine the predictive power of selected behavioural and psychobiological variables for recidivism, Virkkunen, DeJong, Bartko, Goodwin, and Linnoila (1989) studied a total of 58 violent offenders (n = 36) and arsonists (n = 22) who were followed up for an average of three years after release from prison. Based on the original crime report, violent offenders were divided into impulsive (24) and non-impulsive (12) groups. A linear discriminant analysis was computed in an attempt to predict membership in the two groups of recidivists (13) and non-recidivists (45). The concentration of 5-hydroxy-indoleacetic acid (5-HIAA) in the cerebrospinal fluid (CSF) correlated with both the CSF homovanillic acid (HVA) [$r<.52$, $p<.001$] and the 3-methoxy-4-hydroxyphenyl-glycol (MHPG) [$r = .48$, $p<.001$] concentrations. The blood glucose nadir showed only weak correlations with CSF monoamine metabolite concentrations, while the length of period outside prison before committing a new crime did not correlate with any of the independent variables (Virkkunen *et al.*, 1989). The strongest predictors of recidivism were found to be the blood glucose nadir during the oral glucose tolerance test and the CSF 5-HIAA concentration. A discriminant function based on the blood glucose nadir and the CSF 5-HIAA concentration classified 84.2% of the subjects correctly as to the outcomes of recidivism and non-recidivism. Virkkunen *et al.* (1989) concluded that the psychobiological variables alone or in combination with the behavioural variables had more predictive power for recidivism than any combination of behavioural variables.

The Role of the Family in Predicting Adult Criminal Recidivism

Originally, the family was aimed at maintaining order and readiness for defence of its members, and carried out essential functions of the later State (Palermo & Simpson, 1994). Eventually the family helped its members internalize institutions, social and moral values, and responsible roles. It passed on basic adaptive techniques proper to the members' culture, as well as the sense of social responsibility which is required for proper human development and interaction (Palermo & Simpson, 1994).

Passingham (1968) tested Bowlby's hypothesis that delinquents who had experienced parental separation would display more intellectual retardation and emotional maladjustment than those from stable home backgrounds. A group of 50 approved school boys who had all been separated from their parents and placed in the care of a local authority for over six-months at some time in their life was compared on intelligence, educational and personality tests with a group of 50 approved school boys randomly selected and a group of approved school boys with stable home backgrounds. The only significant difference found was the higher incidence of enuresis in the children's home group. Various sub-groups within the children's home group were compared in an effort to isolate more homogeneous groups that did differ on these tests, however no difference was found. Passingham (1968) concluded that only under some conditions does physical separation from parents result in intellectual, educational, and emotional disturbance.

Still, researchers and criminologists have suggested that children who grow up in dysfunctional families may learn aggressive or antisocial behaviours, may not learn to control unacceptable behaviour or delay gratification or respect the rights of others, and may not be adequately supervised to preclude association with antisocial or delinquent peers (Wright & Wright, 1992). Given the importance of early family life, it seems to follow that later family life might also be associated with a reduced likelihood of adult criminality. Popular belief suggests that family ties, having a job, being married and having children, and holding other social bonds within the community mitigate against criminal behaviour by providing people with a social investment in conformity. According to Wright and Wright (1992), what transpires in the family during a child's life may influence that child's later behaviour, but adult family life may also play an important role in changing the life course.

Whether one agrees with the argument that adult family relations play little or no role in one's decision to commit a crime, or with others who contend that bonding to one's family is a significant factor in preventing criminality, ultimately rests on how one perceives human development (Wright & Wright, 1992). While one perspective suggests that the experiences of infancy and early childhood have a lifelong effect on behaviour, the second view suggests that important changes occur across the life course from birth to death. It is this perspective which holds that many individuals maintain considerable capacity for change and that the consequences of early childhood experiences are continually modified by events during adolescence and adulthood (Wright & Wright, 1992).

MARITAL OR FAMILY VARIABLES RELATED TO PREDICTION OF ADULT CRIMINAL RECIDIVISM

As already indicated, there is growing evidence to support the hypothesis that certain traits or factors inherent in a child or environment increase the likelihood that the child will become delinquent and continue in this delinquency throughout adulthood (Moore, Pauker, & Moore, 1984). Some of the implicated factors include parental inability to provide consistent affection and/or discipline, large family sizes, parental age at child birth, child's birth order, family discord, parental unemployment, familial criminality or mental illness, and separation from parents. Moore, Pauker, and Moore (1984) examined the relationship between vulnerability factors and recidivism by testing the hypothesis that first offenders who repeat delinquencies display more high-risk factors than those who do not repeat delinquencies. Four factors were identified which distinguished recidivists from non-recidivists. All factors of family size, parental age at child's birth, birth order, and socioeconomic status were more prevalent in the recidivist group and significantly so for the factors of inconsistent discipline, school failure, previous agency contact, impulsive behaviour, parental unemployment, and parental criminality (Moore, Pauker, & Moore, 1984).

Extending these results, 21 repeat killers in Sweden, 53% of which were sentenced to a hospital order and 47% sent to prison, were investigated (Adler & Lidberg, 1995). Of those sentenced to a hospital order 2.2% committed a second or attempted murder, as did 1.1% of those sentenced to prison. The offences were mainly committed within the family and at home. The majority (18) suffered from personality disorder and five also had a cerebral lesion. Most of the men (18) were addicted to alcohol and narcotics (12), alcohol (5), and diazepam (1), and only two men reported having had a good childhood. Twelve of seventeen men were battered as children and half had an alcoholic father. The men were raised in large families with up to ten sisters and brothers (mean 4.3) and 66% had been placed in institutions or foster homes, primarily as teenagers. They had often spent long periods away from their homes (up to 5.5 years) and lived in many different institutions and foster homes (up to 10 different places). Clearly the lack of responsibility in socializing and caring for these individuals by adult family members influenced their subsequent acts of violence.

Each of these and other variables related to the family and marital relationship will be examined more closely in the following sections.

Family Psychopathology

It is not unreasonable to expect that some biological predisposition toward antisocial behaviour may characterize serious recidivistic and violent criminal offenders. Moffitt (1987) used the adoption method to examine the contribution of mental disorder in adoptees' biological backgrounds. Multiple recidivistic non-violent criminal behaviour was found at a significantly elevated rate in adopted-away sons when mental disorder and criminal involvement were characteristic of the adoptees' biological families. A similar, but non-significant, elevation was found for rates of violence. Parental diagnostic types associated most strongly with sons' later criminal involvement were drug abuse, alcohol abuse, and personality disorders. Parental psychoses were not related to offspring recidivism or violence in this cohort. Possible confounding effects of missing data, institutionalization prior to adoption, information given to adoptive parents by the adoption agencies about the child's biological background, historical period, perinatal factors, and selective placement were considered (Moffitt, 1987).

Attachment and Parent-Child Relationship

Predictions of adult criminality based on knowledge of the parent-child relationship have been useful in understanding the role of developmental and familial variables in recidivism. Specifically, it has been suggested that the absence of early secure attachments to parents may predispose individuals to a life of delinquency and repeated criminal behaviours.

Raine, Brennan, and Mednick (1994) tested the biosocial interaction hypothesis that good parental care and the opportunity to bond with a caregiver in the first year of life can reduce the deleterious cognitive and behavioural effects of birth complications. The researchers studied a cohort of 4,269 consecutive live male births. Measures of birth complications (age 0), early maternal rejection (age 1 year), and violent crime (age 18 years) were obtained. A logistic regression analysis indicated a highly significant interaction between delivery complications and early child rejection in predicting violence (2[df = 1,ÿN = 3,175] = 10.4, p<.002), suggesting that those who experienced both birth complications and early child rejection were most likely to become violent offenders in adulthood. The interaction between birth complications and early child rejection was again significant when comparing violent criminals with non-criminals (2[df = 1,ÿN = 3,729] = 12.3, p<.0005). Raine *et al.* (1994) argued that the findings illustrate the critical importance of integrating biological with social measures to fully understand how violence develops. Moreover, the results suggest that prenatal, perinatal, and early postnatal health care interventions could significantly reduce violence in later adulthood.

Chockalingham (1983) compared 50 recidivists and 50 non-recidivists in order to study the relationship between recidivism and social factors such as defective discipline and run-away experiences from home. The results indicated that more recidivists than non-recidivists were subject to defective discipline, lacked parental supervision, and had parents who lacked knowledge of their child's offences. Moreover, more recidivists than non-recidivists had run-away experiences in childhood. Chockalingham (1983) suggested that running away from home behaviours in childhood may have reflected strained and avoidant relationships with parents, and a lack of recognition and sense of belonging. The persistence of these relationships and sentiments may have followed through into adult relationships and subsequent criminal activity.

In an attempt to identify the relative importance of family controls in predicting adult official and self-reported criminality, as well as to compare the variables associated with late adolescence and adult offending, a total of 1611 boys between 12 and 16 years of age completed a self-administered questionnaire (LeBlanc, 1994). A follow-up two years later was conducted on a random subsample of 458 boys; however, due to sample attrition and other related factors, analyses were based on 309 men. The variables representing family and school experiences explained 22% of the variance of official and 29% of self-reported adult offending. The early adolescence variables explained 36% of the variance of late adolescent offending. In each of the cases, the proportion of variance explained is much more important for late adolescent delinquency than for adult criminality. LeBlanc (1994) indicated that the results lend credence to an assumption of developmental criminology that offending depends upon factors relative to a particular age period. Social control during adolescence is more powerful for predicting offending in late adolescence than for the explanation of adult offending. When all the family and school variables were considered simultaneously, three variables were significantly related to adult official criminality ($p<.0001$): school performance during the first part of adolescence (beta 0.27), and two variables measured during late adolescence (attachment to parents (beta 0.22) and self-reported delinquency (beta 0.20)). For adult self-reported offending, the variables were school performance during the first part of adolescence (beta 0.38) and attachment to parents (beta 0.23) and self-reported delinquency (beta 0.18) during the second half of adolescence (LeBlanc, 1994). Offending in late adolescence is explained by three variables: self-reported delinquency during early adolescence (beta 0.42), school performance (beta 0.18), and attachment to parents (beta 0.15). Deviant behaviour, family bonding, and school performance were related to adolescent and adult offending. LeBlanc (1994) argued that the results confirm the studies of others who have found that although childhood delinquency is linked to adult crime, job stability and strong attachment to spouse inhibit criminal and deviant behaviour. Attachment to spouse appears to replace attachment to parents and job stability appears to substitute for school performance.

Three groups of young, violent, incarcerated male offenders were compared through an analysis of semi-structured interviews (Yates, Beutler, & Crago, 1983). Many of these offenders tended to describe the early relationships with their fathers as more important than the early relationships with their mothers. The results of a discriminant function analysis revealed that the property offenders were less likely to have had good relationships with their girlfriends, and their mothers had married more often than the murder and violent person offence groups. Property offenders formed the most coherent group in that 71% were appropriately classified by the discriminant function, whereas 60% of those convicted of murder and only 49% of those convicted of violent person offences other than murder were accurately classified (Yates *et al.*, 1983). On the basis of this study, it seems that the early paternal rather than maternal relationships are more important for these young offenders; that violent person offenders, regardless of how severe the crimes, are relatively homogeneous; and that property offenders are differentiated from violent person offenders in that they tend to have more impaired relationships with others and are more likely to have been labelled as emotionally disturbed or as learning disabled in school. Clearly the early paternal influence seems stronger than the maternal influence in determining the presence or absence of violent criminality. While Yates *et al.* (1983) suggest this could be because there are directly destructive aspects of the father's relationship with the child, it may also be because the father serves as a role model for assaultive or criminal behaviour. The father may teach his son appropriate ways to express aggression and in the absence of this positive role modelling fosters delinquency and future adult criminality.

Experiences of Childhood Abuse

Often related to the quality of parent-child relationships is the experience of childhood physical and/or sexual abuse within or outside the parameters of the family. A prevalent clinical assumption regarding both adult and adolescent sex offenders is that many have been sexually abused as children (Worling, 1995). From this it has been hypothesized that sexual-offending behaviours somehow stem from early sexual victimization. To test this relationship, Worling (1995) gathered sexual abuse histories from 90 adolescent sex offenders following an average of 13 months of clinical interactions. Consistent with previous studies, victim age and gender were significantly correlated, $2(1,N = 90) = 14.77$, $\underline{p}<.001$, indicating that when male victims were chosen, they were almost exclusively children; however, when female victims were chosen, they were equally likely to be either children, peers, or adults. Among the adolescent sex offenders who reported being the victim of prior sexual abuse, 75% had sexually assaulted a male child victim(s), while only 25% had sexually assaulted female children, peers, or adults. The results suggested that sexual victimization may be an important explanatory variable for adolescent sexual assaults against male children. Despite feelings of victimization, sexual abuse also involves sexual stimulation. Worling (1995) explained that if some boys subsequently masturbate to fantasies of their early sexual experience, they may be conditioning their sexual arousal to cues of young boys. Moreover, given that most sex offenders are male, sexual victimization may raise questions of sexual orientation. A male victim may wonder whether his homosexual tendencies are a result of the sexual arousal experienced during the assault. Thus, in addition to role modelling the behaviour of their offender, sexual offenders may engage in these offending behaviours in order to regain a sense of control and mastery over their own victimization and homosexual conflicts.

Similarly, Burgess, Hartman, and McCormack (1987) interviewed 34 young people who had been sexually abused as children six or eight years after the abuse had occurred and compared them with 34 control subjects who had not been abused. They also compared subjects who had been abused for less than one year with those who had been abused for more than one year. The findings suggested a link between childhood sexual abuse and later drug abuse, juvenile delinquency, and criminal behaviour. Specifically, delinquent and criminal behaviours were associated with the previous trauma of childhood physical abuse in boys who were in adult and peer sex and pornography rings for an extended time and who, on disclosure, were blamed for their sexual participation, were socially excluded, and dropped out of school. When prolonged sexual abuse was compounded by witnessing and perpetrating sexual dominance in a ring, the nature of the experience had a primary influence on the person's response pattern. Burgess *et al.* (1987) theorized that for the abused who become abusers, dissociation resulted in a massive blocking at the sensory level (e.g., their need to override numbness by seeking extreme states of excitement through drugs), at a perceptual level (e.g., a minimal cue response for interpersonal feelings of tenderness, attachment, and caring paired with a heightened predilection for deviant stimuli), and at a cognitive level (e.g., the condoning of sexual violence by adults and negation of social values). The results are suggestive of the earlier argument that the youth's denial of his position of vulnerability and helplessness as a victim enhances identification with aggression.

Support for a child abuse syndrome was found in another study, where 34 cases from a social service department were reviewed. The hypothesis that violence breeds violence and that a child who experiences violence has the potential of becoming a violent member of society in the future was investigated (Silver, Dublin, & Lourie, 1969). The researchers longitudinal study and review of family backgrounds over three generations demonstrated that some abused children became abusive parents or violent members of society.

Family Structure and Birth Order

Research has suggested that a significant relationship may exist between the recidivism rates of criminal offenders and one type of family configuration variable, birth order. An early study conducted by Hart and Axelrad (1941) based on an analysis of records gathered in the casework of an institution for delinquents, compared children from families of five or more children with families having only one child. The differences in symptomatology and behaviour patterns exhibited by the two groups were ascribed to the different family situation in which the groups were found. The only child situation resulted in a more neurotic, seclusive, immature, less aggressive delinquent than the contrasted group. On the other hand, the delinquent from a large family appeared to be more the product of the predatory gang, displaying anti-social versus non-social tendencies. Although the type of home background differed in kind, the one factor all of the children had in common was that they came from unsatisfactory homes. Thus, Hart and Axelrad (1941) concluded that it is not the number of siblings which is of etiological value for delinquency, but rather the lack of a normal child-parent relationship.

Unlike Hart and Axelrad (1941), others have found support for the predictive relationship between family size or birth order and criminal recidivism. Horton and Whitesell (1979) examined 396 adult male offenders who completed a questionnaire in order to determine if sex and number of siblings could be used as joint predictors of criminal recidivism. Standard multiple regression analyses revealed that number of older sisters was significantly related to both number of prior incarcerations ($F1,391 = 4.66, p<.05$) and number of months of incarceration ($F1,391 = 6.54, p<.01$). Horton and Whitesell (1979) recommended cross-validation of these results in order to yield potentially valuable insights into the personality structures of habitual criminal offenders.

In another study, Horton and Medley (1978) elicited information about the number of previous convictions and demographic information from 208 non caucasian and 193 caucasian adult male offenders. A family of more than four members was defined as large, while a family with fewer than four people was considered small. The results demonstrated that proportionally fewer firstborns were recidivists than other birth orders. None of the other birth order positions or family size variables revealed a statistically significant relationship.

Other investigators have also tested the belief that the size of the family and the serial position in it are factors that precipitate behaviour problems and delinquency. Shield and Grigg (1944) reported their study of 300 adult white male prisoners, in which extreme ordinal position was used to describe the first born, the last born, or the only child. The results revealed that 50% of those convicted of crimes against property and 45% of those convicted of crimes against persons had an extreme ordinal position. Specifically, while among caucasian prisoners there was a slight tendency for the oldest child to be the most frequent offender among those of extreme ordinal position, among non caucasian prisoners, only children appear significantly more frequently in both types of crimes. Shield and Grigg (1994) indicated that the relationship between extreme ordinal position and criminal behaviour is likely linked to differential reactions to unique ordinal positions within the family.

Marital Relationship

Although it has been argued that career criminals may cease criminal activity when they marry or have a child of their own, some cross-sectional studies have found that marriage and family do not influence the likelihood of crime among adults (Ouimet & LeBlanc, 1996; Wright & Wright, 1992). It may be that individual differences in the likelihood of committing crimes persist over time and that transitional points do not drastically alter one's tendency toward criminal behaviour. However, few longitudinal studies have examined transitions during adulthood that might divert the trajectory toward a career in crime. Several longitudinal studies have carefully examined childhood familial experiences in relation to adult criminal lifestyles, but few have examined life events such as marriage and parenthood and their impact on criminal behaviour (Wright & Wright, 1992). Some research suggests that male criminals in comparison to non-criminals are more likely to marry younger, often marry already pregnant women, and are more likely to marry criminal women. In contrast, others have found that criminals, while no less likely to be married or in a significant relationship than non-criminals, were more likely to divorce or separate, to not get along well with their spouse, and to be involved in violent marital relationships (Wright & Wright, 1992). These results suggest that marriage and family life may simply be another indicator of social irresponsibility, along with erratic employment, criminal associates, and substance abuse.

Among the studies that have been conducted in this area, it appears that strong inmate-family relationships are beneficial for criminals. Research which has examined the quality of the marital relationship observed an association with criminality. Specifically, attachment to spouse was found to be associated with a decrease in the likelihood of adult criminality. Among convicted criminals, maintaining an active family interest while incarcerated and establishing a mutually satisfying relationship after release were two factors associated with decreases in subsequent reoffence (Wright & Wright, 1992).

Hanson, Steffy, and Gauthier (1993) examined the long-term recidivism rates of 197 male child molesters who were released from a maximum security provincial prison. Overall, 42% of the total sample were reconvicted for sexual crimes, violent crimes, or both, with 10% of the total sample reconvicted 10 to 31 years after being released. While none of the mental health and personality tests used in this study were significantly associated with recidivism, the two that were significant included having never been married and previous sexual convictions. A multiple regression was conducted using the variables of marital status (single, never married, common-law), previous sexual convictions, and victim type (groups of boys only, intrafamilial girls, other). The overall regression significantly predicted recidivism, $F(4,157) = 6.0$, $p<.0005$, $R = .36$, adjusted $R2 = .11$. Among the variables that best predicted outcome, offenders were found to be at higher risk for recidivism if they had never been married, had prior sexual convictions, and admitted to many previous offences. Hanson *et al.* (1993) concluded that although child molesters are at significant risk for reoffending throughout their lives, the greatest risk period appears to be the first five to ten years. The results of this study also suggested that being married may deter sexually criminal behaviours.

Mohr, Turner, and Ball (1962) studied the psychiatric, social, and psychological conditions of 54 exhibitionists and 55 paedophiles. Similar to other studies, the total rate of recidivism during the follow-up time for all groups was 14%. Exhibitionists had the highest recidivism rate (20%) and paedophiles showed a lower rate of recidivism (13%). Exhibitionism occurred predominantly between adolescence and the mid-30s with a peak in the early to mid-20s. Although the intelligence of exhibitionists followed a normal distribution, their school performance was below that of the general population, with more than 25% not having progressed beyond grade twelve. While relationships with mothers were characterized by feelings of ambivalence, relationships with fathers were described as negative and violent. Moreover, temporary or permanent paternal absence occurred in 33% of the exhibitionists' during childhood. Exhibitionists came from families of one to ten children with an average of four children per family. Most idealized their relationship with siblings and seemed unable to express resentment and hostility. Approximately 66% of the exhibitionists were married; most of them married in their early to mid-20s and after the age of 25 only three remained single. The two outstanding factors related to exposure seemed to be impending or recent marriage and impending or recent birth of a child (Mohr, Turner, & Ball, 1962).

Based on an ongoing study of the first 50 inmates admitted to an American treatment center, detailed life history and family information was collected (Angliker, Cormier, Boulanger, & Malamud, 1973). At the time of first follow-up, 56% had not violated their conditions of parole, 38% had recidivated, and the remaining had not yet been released from prison. Of the men who recidivated, 10 had violated their conditions of parole, 7 had committed offences similar to their previous record, and only 2 were rearrested for new offences. The second follow-up 22 months later showed a noticeable improvement in the rate of recidivism; only 13 men had violated and the remaining 37 were on parole or their sentences had expired and they were still functioning well in the community (Angliker *et al.*, 1973). In 58% of the cases, there was a history of delinquency in one or more members of their family of origin, and over 50% had a juvenile record themselves. Analyses demonstrated 74% had a high coefficient of incarceration with a correspondingly low coefficient of work while out of prison. Moreover, most of the inmates came from broken (12%) or unstable (54%) homes, and 64% came from multiproblem and/or multi-delinquent families. Half of the inmates were single at the time of admission and only 3 were still married at the time of admission. The remainder were separated (20%), divorced (14%), or living in common-law relationships (10%). The causal direction of these relationships is unclear, in that it is unknown as to whether marital breakdown occurred prior to or as a result of criminal and recidivistic behaviours.

Blackler (1966) conducted a wide-ranging study of men in the early years of their criminal careers, comparing 242 primary recidivists with 438 men on their first sentence. Information was obtained from prison records and interviews on numerous demographic, personal, and social variables. Although the two groups did not differ significantly on age of current conviction or on who had been married as compared to those who were single, marriages among primary recidivist men had more often been broken ($2 = 4.93$, $df = 1$, $p<.05$) and more of them were living with women other than their legal wives. No differences were found on the number of children either groups of men had and 49% of primary recidivists compared with 62% of first sentencers reported "good" contact with a wife, cohabitee, or family of origin ($2 = 9.59$, $df = 1$, $p<.01$). With regard to contact with relatives and friends, results show less close and effective contacts for the recidivist group ($2 = 14.57$, $df = 1$, $p<.001$). A higher proportion of first sentencers were living with their own family than primary recidivists ($2 = 4.50$, $df = 1$, $p<.05$) and although non significant, primary recidivists felt more often that their accommodation was unsatisfactory ($2 = 3.05$, $df = 1$,$.08> p<.05$). While the first sentence group had a larger preponderance of men first convicted later in life, the primary recidivist group had a very high proportion of men who were first convicted in adolescence. In a follow-up study years later, it was found that more primary recidivists (67.3%) than first sentencers (38.1%) had been reconvicted, although the first sentencers had been at risk longer (Blackler, 1966). Although difficult to isolate the order and specific family variable that may have resulted in persistent criminal activity, these results suggest that recidivists tend to experience family breakdown and relational difficulties in a wider range of relationships than first time offenders.

Additional support for the prediction that recidivists tend to experience marital disruption and conflict more frequently than non recidivists was found in a study conducted by

Mandel, Collins, Moran, Barron, Gelbmann, Gadbois, & Kaminstein (1965). Based on a sample of 446 subjects (342 paroled, 49 released on expiration of sentence, 47 discharged prior to expiration of sentence, 7 conditionally released, and 1 released due to commuted sentence), data were obtained from existing records on 53 variables so as to reconstruct each person's correctional career from the date of his first known arrest to the day of his admission. According to the criteria employed, the data indicated that 62% of the study population were recidivists. A significant difference in admission age between recidivists and non-recidivists was found, whereby 81% of the recidivists were less than 25 years of age and 63% of the non recidivists were below that age. Although numerous family and individual variables were examined, for purposes of the present discussion, attention is directed toward the results related to marital relationships. Recidivists were found to differ significantly from the non recidivists on this variable, with non recidivists showing a remarkably significant tendency to come from more intact living situations than recidivists. These results highlight the high degree of family dismemberment or disruption that many recidivists experienced.

SUMMARY

Although numerous demographic and psychosocial variables have been studied as potential predictors of criminal recidivism among adults, measures of past behaviour appear to be among the most stable predictors of future violence and criminality. A number of neurological factors have been investigated, such as high rates of brain damage among criminals which may have been incurred during prenatal and perinatal development. The association between alcohol consumption and violent crime has also been extensively investigated. Results suggest that the relationship between aggression and alcohol intake is moderated by a complex group of variables, including personality, expectations, provocation, and amount of alcohol intake (DeJong, Virkkunen, & Linnoila, 1992). Various family factors have also been implicated. Some of these include family psychopathology, quality of parent-child relationships, experiences of childhood victimization, and marital status and quality of relationship. Clearly, much remains to be learned about whether adult family life can alter a delinquent's criminal career and can buffer against criminogenic influences in adulthood (Wright & Wright, 1992).

While there tends to be a general consensus among researchers regarding predictors of recidivism, there is much less consensus and discussion about why and how these variables have the effect they do. According to Grubin and Wingate (1996), for actuarial studies to have clinical relevance, they must also show they can contribute to risk assessment in specific cases and help formulate treatment needs. This will require movement away from a blind reliance on variables to a fuller understanding of how these variables relate to the phenomenon of criminal recidivism.

CRITIQUE OF RESEARCH DESIGN AND METHODOLOGY

The variety and seriousness of methodological problems in existing recidivism studies often undermines confidence in their results. According to Furby *et al.* (1989) methodological weaknesses and a lack of uniformity tend to be the characteristics plaguing the conditions under which most recidivism studies have been conducted. Because most studies have been conducted to answer policy makers' questions in an unrealistically short period of time and with inappropriate financial resources, many investigators have relied on existing samples of offenders and existing records for their data. These approaches in and of themselves may seriously restrict the quality of the conclusions that may be drawn.

One possible weakness of some of the studies involves their reliance on officially recorded arrests as measures of offences and re-offences. Official criminal data as recorded in the legal and judicial setting may be more reliable than the self-reports of offenders. However, relations other than those observed in some studies between prior criminal behaviour and recidivism may distort the estimation of actual criminal behaviour (Hall & Proctor, 1987). Arrest data tend to be dependent on who and where the arrest data was reported and recorded. Moreover, undetected reoffences are a problem when one relies on official recordings of criminal activity (Boudouris, 1984; Grubin & Wingate, 1996). Crime is related to conditions in society and its rates may change as social and economic aspects of society change or vary geographically. For instance, lower rates of crime and recidivism may be a reflection of more lax supervision policies over ex-offenders or lower availability of community resources (Wormith & Goldstone, 1984).

A related concern involves sample selection. Sample selection is a crucial step in recidivism research because it determines the extent to which one can generalize the results to sex offenders not participating in the study (Furby *et al.*, 1989; Raine, Brennan, & Mednick, 1994). The feature determining generalizability of results is the degree to which the selection procedure ensures that the sample studied is representative of a larger population of offenders. Ideally, the sample characterization should contain information on all attributes of an individual and his behaviour that are empirically or theoretically linked to recidivism. Without such information, it is difficult to generalize the results of a study to other samples or to subgroups within the sample (Furby, Weinrott, & Blackshaw, 1989). Although most studies report much of this information, the specific nature of the samples investigated often make it impossible for researchers to extend their results to different recidivating populations.

The majority of studies have also been retrospective in nature. Although retrospective studies are relatively inexpensive, and can provide valuable information regarding treatment dropout rates, shape of the recidivism curve, or psychometric properties of instruments, because few of the studies have secured informed consent for active participation among offenders, both the type and sources of data accessed have been restricted. Prospective designs, on the other hand are methodologically stronger as they permit careful data collection and recording. Moreover, the sample is selected before the follow-up period begins, and an assessment battery can be designed that can be sensitive to events that occur during incarceration or treatment and after release (Furby *et al.*, 1989).

Another methodological weakness of some recidivism studies involves an insufficient sample size for conducting appropriate statistical tests of comparisons within or between studies (Furby *et al.*, 1989). For instance, to predict the magnitude of effect, one necessary step in any power analysis is to maintain some estimate of recidivism for each of two or more groups. Tests of insufficient power are likely to produce an unacceptably high probability of falsely concluding that there are no group differences (i.e., Type II errors), when in reality a negative finding may simply be the result of too few individuals in each group. Moreover, group comparisons are often of interest in recidivism studies, the most frequent occurring between treated and untreated offenders. Inferential statistics would be used to test the significance of the differences between groups and to specify the degree of confidence one has of the obtained differences between the entire populations from which the samples were drawn. However, since many recidivism studies do not involve random sampling, some important assumptions of inferential statistics are violated.

As a result of the type of samples employed and statistics applied, much of the empirical research on the criminal recidivism is mostly descriptive, as it deals with concepts of participation, frequency and diversity of criminal behaviour (Ouimet & LeBlanc, 1996). Despite considerable methodological care being taken to ensure that predictor variables are based only on file information and avoiding contamination of personal history variables by program and recidivism data, many of the studies are not truly predictive (Harris, Rice, & Cormier, 1991). In fact, although many of the analyses used in recidivism studies do not establish any relationships of direct causality, researchers tend to discuss the results as though they do. This then has significant negative implications both methodologically and practically for people studying and working with criminal recidivists.

Perhaps one of the most frequently cited critiques of the recidivism research, but one which has not received enough attention to be remedied involves the most appropriate definition of what constitutes recidivism. Little attention has been paid to the methodological issues that are involved in measuring recidivism. Currently, the definition of choice depends upon the question to be answered (Furby *et al.*, 1989). The research on recidivism is fraught with controversy due in large part to varying definitions of successful community adjustment and the discretionary judgements of the criminal justice system with respect to the detection and handling of offences (Boudouris, 1984; McNamara & Andrasik, 1982). One must decide whether to rely on official arrest and conviction records, on self-reports by offenders, or on information from knowledgeable third parties. One general rule of thumb is that recidivism information based on multiple sources is likely to be more valid than that based on only a single source.

Another limitation is that few useful definitions of recidivism have clearly specified a consistent follow-up period during which commission of the act will constitute relapse. Because most recidivism studies seek to determine how many offenders are repeating unlawful behaviour, it is generally accepted that the longer the follow-up period, the more accurate the results. Most researchers agree that long-term follow-up is crucial in order to accurately detect crime-free and crime-filled periods. Despite this consensus, investigations differ so greatly on follow-up intervals that it becomes impossible to make any practical comparisons across studies (Boudouris, 1984). When no follow-up period has been specified there is a danger in comparing groups of offenders over varying periods of time. Because of the great costs and demands of time and financial resources involved, many researchers opt for follow-up periods based on convenience or expectation. In selecting short-term follow-up intervals, researchers likely miss the bulk of recidivists and underestimate the extent of recidivism.

In summary, serious methodological flaws have been associated with research efforts related to the prediction of recidivism. Some of the problems include: 1) difficulty generalizing results from one population to another given sampling biases, 2) collecting data which is often static and historical in nature thereby not reflecting the dynamic nature of human subjects, 3) containing too few cases for reliable analyses and intergroup comparisons, and 4) varying the time allowed for reoffending thereby resulting in inconsistent conclusions and recidivism rates being drawn (Davis, 1964; Grubin & Wingate, 1996; Wormith & Goldstone, 1984).

RECOMMENDATIONS

According to Mandelzys (1979), most statistical prediction studies, regardless of the origin of the sample, have failed to deal with the possible correlates of their independent variables. In other words, the recidivism rates of those released from prison have little meaning if researchers do not deal with the large number of variables hypothesized to be related to the causes and aetiology of recidivism. It is recommended that future research focus on the causes and aetiology of recidivism as opposed to the statistical probability of recidivism. The correlates of success or failure in the treatment of criminals should be emphasized rather than simply the fact that success or failure occurs.

In order to deal meaningfully with both offence and recidivism behaviour, it is recommended that researchers treat their samples as parts of a whole rather than as a totality. Researchers who have attempted to treat all offenders as a homogenous group have discovered conflicting and inconsistent results. Incarcerated offenders are heterogeneous in nature and classifications of recidivism predictor variables should reflect this. Through experimentation and application of offender-specific predictors we may arrive at discriminators that are significantly more powerful than those used in the past. For instance, a greater understanding of what predicts sex offence recidivism would be beneficial not only in deciding who should be imprisoned and for how long, but also in identifying offenders with particular treatment needs (Grubin & Wingate, 1996).

To date, much of the research has been fragmentary, descriptive, and correlational in nature. Only in the last decade have multivariate statistical approaches been applied to a comprehensive array of variables (Marsh *et al.*, 1986). It is recommended that more sophisticated multivariate techniques be emphasized in future research on the predictors of adult recidivism. Specifically, structural equation modelling applications may enable researchers who have utilized sound methodological procedures to investigate underlying developmental and etiological factors related to criminal offending and recidivism. In turn, the resultant discussion from a causal perspective may be appropriate, as well as of substantial practical value to researchers, corrections personnel, mental health professionals, governments, and families.

Clearly, future research could be directed productively toward articulation of the combined role of demographic, family, and individual variables among subgroups of the heterogeneous criminal population as a basis for designing effective prevention and intervention programs (Marsh *et al.*, 1986). Of special interest are groups of recidivists who remain undetected in society. These people comprise a special group of offenders whom we know very little about in terms of personal history and social consequence. Webb *et al.* (1976) suggested that research take into account positive factors not expressed in the statistics as well as negative ones, such as individuals becoming quite adept at not getting caught and not becoming a statistic.

Given the foregoing review, it appears that a developmental theory of adult offending and repeat offending may be an invaluable next step. Self-report measures and official rates of criminal activity could be tested and verified with data sets that incorporate adolescent and adult psycho-social and behavioural variables. The research on family and marital variables may have great significance for policy decisions. If empirical investigations identify significant adult life experiences (such as getting married and having children) as reducing the likelihood of offending, then support for family life may serve as the best primary preventive function for lowering the incidence of crime and recidivism (Wright & Wright, 1992).

Among already convicted and institutionalized adult offenders, establishing and maintaining healthy family relations may result in reduced chances of future recidivism. In both community and institutional settings, it is recommended that mental health and corrections professionals endeavour to provide opportunities and supports for regular, positive offender-family interactions. Even in 1949, Abrahamsen suggested the need to develop a new general and mandatory treatment for the offender; a treatment which would probe into the emotional difficulties that caused the offender to turn to crime as an outlet. For many offenders, this may mean treatment for self as well as for the family subsystem (i.e., parents, close relatives, and/or intimate partner). Although far from elucidating the causal relationship between family life and adult criminality, the existing research suggests a link that may justify action to strengthen families (Rice & Harris, 1995; Schorr, 1991). Studies indicate the need for an emphasis on preventative measures in our communities, particularly in the areas of child abuse and chemical dependency.

Another approach which may yield meaningful information pertinent to the prediction of recidivism is one that identifies relevant situational variables which foster criminality in the post-release environment. Knowledge of the environment in which the offender will be released and living in may be used to help prepare the offender respond (psychologically and behaviourally) to the possible temptations to return to crime he may encounter. This operational methodology is known as Behavioural Evaluation Treatment and Analysis (BETA) and appears well suited for predicting law encounters subsequent to parole (McNamara & Andrasik, 1982). A closer investigation of the use and effectiveness of this approach may be warranted.

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APPENDIX A: ASSESSMENT MEASURES WITHIN CRIMINAL CORRECTIONS

Prediction of criminal recidivism is needed in order to assist in determining whether an offender should be released, as well as to determine the level of supervision and treatment required both within the correctional institution and the community following release. Inaccurate prediction may lead to inappropriate utilization and application of resources on very low risk offenders or failure to adequately supervise and treat higher risk offenders (Furr, 1993).

Although better than chance, predictions can be made using assessment instruments, there is still a significant amount of variance left unexplained by the variables. Faced with the correctional challenges of the 1990s, one must use multi-method predictor assessment techniques with systematic reassessment to advance risk management practices (Andrews & Bonta). There are a number of assessment instruments that are generally used.

The Burgess Procedure

Burgess Procedure (1928), the base rate for a particular type of offender is examined and the prediction of recidivism based on the specific characteristics of an individual offender is adjusted. Those characteristics, which are known to change the estimate of the likelihood of the re-offence, are used to arrive at an estimate of the offender's risk level. Points are subtracted for those characteristics, which increase the probability of re-offence. This method provides estimates of re-offence which generalize well across samples. Furthermore, if specific subgroups of offenders can be identified which have differing base rates or differing predictor variables for re-offence it may be possible to predict the probability of re-offence among each subgroup of offenders (Furr, 1993).

Statistical Index of Recidivism (SIR) Scale or Statistical Information Recidivism (SIR and ISR-R1) Scale or General Statistical Information of Recidivism (GSIR) Scale

Nuffield's (1982, 1989) SIR or GSIR has the ability to predict the probability of committing a criminal offence in the general population or released offenders. This assessment tool is based on Burgess' method, and the SIR or GSIR Scale is routinely applied to offenders in Canada. The scale involves an extensive review of an individuals criminal record with 15 risk-related items such as age, number and variety of criminal convictions, breaches of trust, etc.). When the 15-items are summed they provide five probabilities of risk for recidivism ranging from poor (33.6% success rate) to very good (84% success rate). The items are reverse scored, with lower scores reflecting greater risk for recidivism. Han and Harman, Motiuk and Porporino, and Wormith and Goldstone (as cited in Loza & Simourd, 1994) have reported favorably on the scales validity in predicting recidivism. It does not however predict very accurately the probability of sexual or violent re-offence. There are no separate norms for specific types of offenders being predicted (Furr, 1993; Rice & Harris, 1995). However, Rice and Harris' (1995) reanalysis of her data with the ROC method show that Nuffield had achieved significant predictive accuracy to warrant the use of the instrument at higher base rates of violence and in longer follow-ups.

Statistical Prediction of Violent Recidivism Instrument

The development of Quinsey, Harris and Rice's prediction tools for violent and sexual recidivism are also based on Burgess' method. Their approach has been to attempt to predict violent or sexual recidivism among offenders who have committed violent or sexual assaults. The Statistical Prediction of Violent Recidivism Instrument is divided into two parts. The first is for use with non-sexual offenders, while the second is for use with sexual offenders. It uses PCL-R scores and other factors related to violent or sexual re-offending (e.g., in the case of sex offenders, it uses the scores from phallometric assessment). The checklist results in scores at 9 risk levels with reported probabilities of sexual or violent re-offence ranging from 0.0 for the lowest group to 1.0 for the highest risk group. The authors (as cited in Furr, 1993) have reported adequate inter-rater reliability for the scoring of file data (r = .90). This appears to be the best available instrument for predicting violent or sexual recidivism among offenders who committed sexual assaults or who have otherwise been violent (Furr, 1993).

Risk Checklist for Child Molesters

Hanson, Steffy and Gauthier's (1992) Risk Checklist for Child Molesters is used to predict the likelihood of a child molester committing a new sexual and/or violent offence following release. The checklist includes the following variables: marital status, victim type, and previous sexual convictions. Scores range from 0 to 5. Because the checklist is based on historical information from files, reliability estimates have both been reported. The instrument sorts child molesters into 6 risk groups with probabilities of sexual or violent re-offending ranging from .14 for the low risk group to .77 for the high risk group. The correlation between risk score and violent or sexual recidivism was .35. This checklist has a restricted range of scores and the second lowest risk group has a lower probability of re-offence than the lowest risk group. However, the checklist demonstrates that the prediction of future assaults by child molesters is possible with a small number of predictors (Furr, 1993).

Level of Supervision Inventory (LSI) and the Level of Supervision Inventory-Revised (LSI-R)

The content of Andrews and Bonta's (1995) LSI-R reflects three primary sources: the recidivism literature, the professional opinions of probation officers, and a broad social learning perspective on criminal behaviour.

The LSI (Andrews, 1982; Andrews & Robinson, 1984; Andrews, Kiessling, Mickus, & Robinson, 1986) was developed to aid case managers in supervision decisions concerning adult probationers and parolees. The LSI systematically brings together risk and needs information important to offender treatment planning (Andrews & Bonta, 1995; Loza & Simourd, 1994).

The current LSI-R contains 54 items denoting specific risk variables grouped into 10 subtotals representing different risk/needs areas: criminal history, education/ employment, financial, family/marital, accommodation, leisure/recreation, companions, alcohol/drug problems, emotional/personal and attitude/orientation. Individual items are scored in a binary format indicating the absence or presence of the risk/need variable or on a 0 to 3 rating scale. When summed, higher scores reflect a greater risk of recidivism and need for clinical intervention. The administrator will need to conduct an interview and collect information available from file records (Andrews & Bonta, 1995; Loza & Simourd, 1994).

Usually its primary focus is on the immediate future, but it can be completed using a retrospective perspective, or a longer term future perspective. It also has been administered at the beginning of parole (Furr, 1993). Specific criteria provided by the LSI-R include: identifying treatment targets and monitoring offender risk; for making probation supervision decisions; for making decisions regarding placement into halfway houses; for deciding appropriate security level classification; and for assessing the likelihood of recidivism (Andrews & Bonta, 1995).

Research on the LSI suggests that it has utility with both probationer and inmate samples. Research with probationers has shown that the LSI has acceptable internal consistency (coefficient alpha r = .72), satisfactory inter-rater reliability (r = .94), test retest stability (r = .80), (Andrews & Robinson; Bonta; Bonta & Motiuk; Motiuk & Bonta; Motiuk, Motiuk, & Bonta as cited in Coulson *et al.*, 1996).

Coulson *et al.* (1996) reported that the coefficient alpha was .90, indicating a high level of internal reliability. The point-biserial correlations between LSI and outcome were .51 for recidivism, .53 for parole failure, and .45 for halfway house failure. All were significant and LSI scores accounted for 26%, 28%, and 20% of the variance for recidivism, parole failure, and halfway house failure, respectively. The two-year recidivism data show a higher probability of recidivism in the high-risk group than in the low-risk group. Eight percent of the low-risk offenders recidivated, compared to 30% of the high-risk offenders. High-risk offenders had a 1-year recidivism ratio of 3.8 to 1 compared to low-risk offenders, a 2-year recidivism ratio or 5.3 to 1, a parole failure ration of 11.2 to 1, and a halfway house failure ratio of 7.1 to 1. This support the usefulness of the cut-off score of 12 with female incarcerates when differentiating between the low- and high- risk categories (Coulson *et al.*, 1996).

Loza and Simourd (1994) conducted a study with 162 federal inmates in Ontario. They suggest that the LSI is a reliable risk/need instrument for use with federal offenders. They found acceptable level of internal consistency, and after a principal components analysis found two factors. Factor 1 labelled Criminal Lifestyle accounted for 27% of the total variance, whereas factor 2 Emotional/Personal Problems accounted for 23% of the variance. Convergent validity was examined by correlating LSI scores with the other measures. Some of the highest correlations were found between the LSI scores and PCL-R. Correlations between Factor 2 (behavioural component) of the PCL-R and LSI total score and subtotals were particularly strong. Although lower in magnitude, the PCL-R Factor 1 (personality component) and LSI correlations were also acceptable, except for the LSI alcohol/drug subtotal. Correlations between the GSIR and LSI total score and the criminal history, education/employment, family/marital, companions, attitudes/orientation, and accommodations subtotals were moderate to strong, with weak correlations found for the financial and alcohol/drug LSI subtotals. Relative to the PCL-R and GSIR, correlations between the LSI and the MCMI scales were low. This was most apparent with the weak but significant correlations between these scales and the LSI criminal history subtotal. The MCMI was not designed for the purpose of risk/need assessment, so it may be tapping personality characteristics that differ from those being measured by risk/need assessment, so it may be tapping personality characteristics that differ from those being measured by risk/need measures. LSI scores of federal offenders are similar to those of provincial offenders. However, violent offenders had statistically significant greater mean scores on the LSI total score (1,159) = 4.95, p<.05, and family/marital, F (1,126) = 5.11, p<.05, leisure/recreation, F (1,156) = 5.08, p<.05, alcohol/drug, F (1,140) = 6.69, p<.05, and emotional/personal, F (1,147) = 24.01, p<.001, subtotals. Treatment targets should then focus on these areas.

Like the SIR Scale, the LSI was designed for use with the general population of offenders. It was not designed to address violent offending. However, Harris, Rice and

Cormier (as cited in Furr, 1993) used the LSI in a study examining the prediction of violent re-offending and they found that the LSI predicted violent recidivism, but the correlation between violent offending and the LSI was only .25. With the low base rate of violent re-offending, this correlation is not high enough to be useful in prediction of violent recidivism in individual cases (Furr, 1993).

The Leiter Recidivism Scale (LRS)

Leiter's (1974) first experimental form of the LRS contained 12 components. Each of these components are rated on a ordinal scale from 1 to 10. Descriptive statements that appear more often in the histories of recidivists and non-recidivists were used to predict recidivism or non-recidivism. A study of the original 12 components of recidivism showed that three in the personality area were not sufficiently related to recidivism to justify keeping them in the scale. They were therefore dropped from the final form, leaving a total of 9 components. Divided into three scales, the components include: time (instability, age-time ratio), personality (social immaturity, lack of social control, lack of vocational adjustment, personality dynamics, abnormal authority reaction, lack of institutional adjustment), and crime (offence level). The 9 subscales were constructed so that descriptive statements of an inmate's actual behaviour could be used to assign him to an ordinal position on each subscale.

In examining the validity of the LRS, the accurate classification of recidivists and non-recidivists exceeded chance ($t = 6.5$, $p<.001$). Furthermore, the combined correlation of all scales with recidivism was .73. All differences between the mean scores for recidivists and non-recidivists were also significant beyond the .001 level. Moreover, the factors personality, time, crime, and institutional adjustment appear to be the most significant elements in the prediction of recidivism. Finally, the index of overlap was computed using weighted scores, and the point of equality was found to be a weighted score of .560. Twenty-six cases or 11% of known recidivists were classified as non-recidivists, making a total misclassification of 37 cases or 12%. Leiter (1974) then concluded that the fewest errors would be made in classification when the score of .560 is used as the point of separation.

Psychopathy Checklist (PCL) and Psychopathy Checklist-Revised (PCL-R)

Hare's (1985; 1991) PCL-R was developed for use as a measure of psychopathy among male forensic populations. The measure focuses on affective and interpersonal dimensions and characteristics of antisocial personality disorder. It is a 20-item checklist scored on the basis of file information and a standardized semi-structured interview. Since each item is scored on a scale of 0 to 2, PCL-R scores can range from 0 to 40. Individual items are summed to yield three scores: Total, Factor 1 (Personality is characterized by selfish, callous and remorseless use of others), and Factor 2 (Behavioural/ Lifestyle which include items that relate to chronically unstable, antisocial and socially deviant lifestyle) (Hare, as cited in Salekin, Rogers & Sewell, 1996). Inter-rater reliabilities have been reported in the range of .82 to .93 and adequate internal consistency has been reported (alpha = .85 to .87) (Hare; Hare *et al.*, as cited in Furr, 1993; Loza & Simourd, 1994; Salekin, Rogers & Sewell, 1996). Test-retest reliabilities have also been reported to be .94 (Cacciola, Rutherford, & Alterman as cited in Salekin, Rogers & Sewell, 1996) and .84 (Alterman, Cacciola, & Rutherford as cited in Salekin, Rogers & Sewell, 1996).

Salekin, Rogers and Sewell (1996) analyzed a total of 18 PCL/PCL-R prediction studies and they report that 41% of non violent offenders were incorrectly classified as violent. Furthermore, in studies where the cut-off scores range from 25 to 33, while 30% of recidivators were missed even though they had had high PCL scores, 42% of the low scorers who had not recidivated were misclassified as recidivists.

Despite it's limitations, the PCL-R appears to be unparalleled as a measure for making risk assessments with white male inmates. The PCL and PCL-R had moderate to strong effect sizes and they appear to be good predictors of violence and general recidivism (Harris *et al.*; Rice & Harris; Webster *et al.*, as cited in Salekin, Rogers & Sewell, 1996). Studies reviewed in Salekin, Rogers and Sewell's (1996) meta-analysis suggests that psychopathy is associated with an increased risk for criminal (mean d = .55) and violent behaviour (mean d = .79). Psychopathic traits also predicted violence amongst those suffering from serious mental disorder (mean d = .53 as well as sexual sadism, deviant sexual arousal, and sexual recidivism (mean d = .61).

Salient Factor Score (SFS-81)

The salient factor score is an actuarial device used by the US Parole Commission as an aid in assessing a federal prisoners likelihood of recidivism after release. The SFS-81 contains six items that produce a score from 0 to 10 points. The higher the score, the lower is the likelihood of recidivism (Hoffman, 1983; Hoffman & Beck, 1985). Hoffman (1983) suggests that the SFS-81 demonstrates predictive validity and stability equivalent to that of the seven-item predictive device previously used. The revised device also holds promise for greater scoring reliability.

The SFS-81 was originally constructed and validated on random samples of released federal prisoners using a two-year follow-up period. Hoffman (1982), for example, found no substantial difference between male and female released federal prisoners in recidivism rate. Hoffman and Beck (1985) further examined the salient factor score using a five-year follow-up period. They found that the SFS-81 was predictive of recidivism when the follow-up period was five years and when the definition of recidivism was restricted to those cases that sustained a new sentence of imprisonment exceeding one year (or the most serious known instances of recidivism).

Criminal Sentiments Scale (CSS)

Gendreau, Grant, Leipciger, and Collins' (1979) CSS is a self-report, 41-item measure of criminal, anti-social attitudes using five-point Likert scales. More specifically, the CSS assesses three content areas: attitudes towards the law, courts and police (ALCP), tolerance for law violations (TLV), and identification with criminal others (ICO). Items from the ALCP are scored so that higher scores indicate positive attitudes towards the law, courts and police, whereas high scores on the TLV and ICO scales indicate pro-criminal attitudes. Previous research has shown the CSS to be predictive within samples of provincial probationers (Andrews, Wormith and Kiessling as cited in Mills & Kroner, 1997) and provincial incarcerates (Bonta, as cited in Mills & Kroner, 1997). Wormith and Andrews (as cited in Mills & Kroner, 1997) have used the CSS in sampling surveys, evaluation of probation services, controlled experiments or therapeutic intervention, prediction of re-offending and release failure.

Mills and Kroner (1997) investigated the predictive validity of the CSS within a sample of violent offenders and sex offenders. Descriptive statistics for the CSS report no significant differences between two of the three subscales with the sex offender and violent offender groups. The ALCP subscale showed the sex offenders have significantly more favourable attitudes towards the law, courts and police than do violent offenders. The results of the correlation of the CSS with the postdictive criteria of prior incarcerations and prior convictions reached significance for all but the ALCP scale and prior incarceration. When the violent and sex offender groups were correlated separately with the CSS subscales, the results revealed significant correlations in all cases for the sex offender's and no significant correlations for the violent offenders. The CSS correlated with the postdictive criteria, but only consistently with the sex offender sample. Furthermore, when the postdictive data was coded in a binary fashion, the significant positive correlation between the sex offender group and the CSS remained only for the criterion of Prior Incarcerations. The violent offender sample showed significant correlation between the Prior Convictions and the ICO only. The results showed no relationship between the CSS and recidivism or release failure for the whole sample. The CSS did not predict recidivism among the homogeneous criminal population represented by the federal incarcerates.

Violent Risk Appraisal Guide (VRAG)

The VRAG is an actuarial prediction instrument using nine equally spaced risk levels. The instrument includes 12 variables covering childhood history, adult criminal history, demographic variables, and psychiatric diagnosis. The variable with the heaviest weighting is the PCL-R score. In the construction sample that consisted of over 600 men admitted to a maximum security psychiatric facility, none of the men in the lowest category re-offended violently whereas all of the men in the highest level did. The correlation between score on the VRAG and violent recidivism was .44 (Rice & Harris, 1997). The VRAG also predicted recidivism among sex offenders just as accurately as it did among violent offenders in general (Rice & Harris, 1995).

ROC methods showed that the VRAG performed equally well at follow-up periods of 3.5 years, 6 years, and 10 years where the base rates for violent recidivism were 15%, 31%

and 43% respectively. ROC's also suggest that the VRAG performed equally well in the prediction of violent acts that varied from common assault to homicide. The VRAG should not be applied to groups not well represented in the studies (i.e., with women offenders), but ROC's showed that its predictive ability seemed to be robust over a broad range of violent offences, and over a broad range of follow-up times (Rice & Harris, 1995).

Wisconsin Juvenile Probation Aftercare Risk Instrument

The Wisconsin risk assessment instrument was developed by evaluating items that have been used in other risk assessment instruments and through the evaluation of new data from correctional agencies. The instrument includes eight variables in determining risk: age at first referral, number of prior referrals, number of prior placements of 30 days or more, drug abuse, parental control, school, peer relationships, and alcohol abuse. For each variable in the scale, points are assigned that range from 0 to 5, resulting in a total score ranging from 0 to 35. Although data were collected to support the selection of items for the scale, Baird's initial report (as cited in Ashford & LeCroy, 1988) does not present data to support of the overall validity of the scale. The report outlines scale development but does not assess the validity of the scale on a population of juveniles.

Minnesota Multiphasic Personality Inventory (MMPI)

The MMPI is an objective personality inventory that is used to assess abnormal behaviour. The inventory requires an examinee to sort 550 statements into one of three categories: true, false, or cannot say. The examinees responses are scored on 4 validity scales which assess test-taking attitudes (cannot say, lie, confusion and correction), 10 clinical scales which assess major categories of abnormal behaviour [Hypochondriasis (Hs), Depression (D), Conversion Hysteria (Hy), Psychopathic Deviate (Pd), Masculinity-femininity (Mf), Paranoia (Pa), Psychasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma), and Social Introversion (Si)], and the special or experimental scales [which include Dependency (Dy), Dominance (Do), Social Responsibility (Re), and Control (Cn)]. The MMPI is the currently most widely researched objective personality inventory (Ingram, Marchioni, Hill, Ramos, & McNeil, 1985).

Millon Clinical Multiaxial Inventory (MCMI)

Millon's (1982) MCMI is a 175-item self-report instrument that reflects basic personality patterns and clinical syndromes corresponding to DSM-III-R diagnoses. It is intended to be used by clinicians in their assessment of individuals with emotional and interpersonal difficulties. The MCMI's psychometric properties have been found to be acceptable (Gynther & Gynther, as cited in Loza & Simourd, 1994). There are 20 sub-scales, which are divided among eight basic personality patterns, three pathological personality disorders, and nine clinical symptom syndromes. The four scales most closely related to risk/need assessment of offenders were used in Loza and Simourd's (1994) study (antisocial personality, alcohol/ drug dependence, and passive aggressive).

HABGT

Both the psychopathology and Adience-Abience scales of the HABGT have been used to differentiate normal from neurotic, psychotic, and brain damaged populations at statistically significant levels (Hutt as cited in Hutt, Dates, & Reid, 1977). Furthermore, the Adience-Abience scale has shown to be related to openness to experience and is useful in predicting therapeutic outcome (Hutt; Hutt & Briskin, as cited in Hutt, Dates, & Reid, 1977). An experimental study of the Adience-Abience scale established a significant degree of construct validity (Credidio, as cited in Hutt, Dates, & Reid, 1977).

Both scales of HABGT are significantly correlated with other indices of delinquent behaviour, with the exception of the correlation between psychopathology and educational achievement. When the Adience-Abience score is higher (indicating more adience), or more openness to new experience, and when psychopathology is lower, delinquents have a better self-concept, reveal greater prosocial behaviours, and educational achievement is higher. When psychopathology scores are lower, self-concept is higher and prosocial behaviours are more favourable (Hutt, Dates, & Reid, 1977).

The Problem Solving Inventory

The Problem Solving Inventory is a 25-item inventory that asks subjects to rate their typical problem solving responses. The inventory yields scores on three factors: systematic approach behaviour, impulsive behaviour, and confidence in one's ability to solve problems. The scale yields a measure of the subjects perceived use and confidence on these three dimensions (Ingram *et al.*, 1985).

The Dependency Grid

Fransella and Bannisters (1977) Dependency Grid was initially called the Situational Resources Repertory Test (Kelly, as cited in Smith, Stefan, Kovaleski, and Johnson, 1991) and currently is referred to by some researchers as the Being Helped Grid (Walker, Ramsey, & Bell, as cited in Smith *et al.*, 1991). Situated across the top of the grid are 17 general role titles of significant people in the subjects social network. Each subject is requested to identify individuals who fulfill the requirements of each category. The grid also consists of 22 situations or specific events experienced in a person's past. Once the individuals and situations are identified the grids matrix is completed by having subjects identify those individuals to whom they could turn for help during the crisis.

The Dependency Grid was administered to 33 first-admission patients, 39 recidivist patients and 29 controls. Recidivists identified the smallest social network and the fewest people on whom they believed they could rely on in a crisis. Patients experiencing their first admission offered an extensive array of individuals to whom they felt they could turn in a crisis. They inappropriately asked many people for assistance regardless of the nature of the problem and the extent of their relationship with these individuals. First-admission patients also perceived themselves as likely to turn to individuals associated with the psychiatric center in times of need more often than recidivists and controls did. Controls reported the greatest number of social resources potentially available to them, but selectively chose a sample of them as individuals on whom they would be comfortable relying. Controls were also able to depend on themselves significantly more often than first-admission patients and recidivists, while the first-admission patient group felt capable of relying on themselves more frequently than the recidivists did (Smith, Stephan, Kovaleski, & Johnson, 1991).

Illinois CANTS 17B

The Illinois CANTS 17B is a 13-item matrix that organizes risk indicators into an overall scale. Items are rated as low, intermediate, and high risk. Factors identified as contributing to risk of maltreatment include a child's age and physical and mental capacities; the caretakers level of cooperation and parenting skills; the perpetrators access and behaviour; and family supports, stress levels, and history of previous maltreatment (Marks *et al.*, as cited in Camasso & Jagannathan, 1995).

Washington State Risk Matrix

The Washington State Risk Matrix includes 32 risk items grouped into seven subscales: child characteristics, severity of child abuse and neglect, chronicity of child abuse and neglect, caretaker characteristics, parent-child relationship, social and economic factors, and perpetrator access. Risk items are rated on a scale of 0 to 4 or no risk to high risk. This instrument is more detailed than the Illinois instrument in the treatment of incident severity, caretaker characteristics, parent-caretaker relationship, and socioeconomic factors (Camasso & Jagannathan, 1995).

Camasso and Jagannathan (1995) compared the predictive performance of the Illinois CANTS 17B and the Washington State Risk Matrix on a sample of child protective service cases using logistic regression and receiver operating characteristic (ROC) curve analysis. Both instruments predict case recidivism, closings, and substantiation with probabilities greater than chance. In the prediction of case recidivism the Washington instrument showed superiority at a statistically significant level, with the most significant contributions to explained variance coming from the severity of abuse or neglect scale and from the child behaviour problems measure. The Illinois instrument, especially the two item caretaker characteristics scale, however, better predicts case closings. Poor parenting, serious cognitive deficits, and an unstable family structure decrease the probability of the case being closed. These relationships are corroborated on the caretaker characteristics scale of the Washington instrument. The curve for the Illinois instrument's prediction of case recidivism approximates the line of chance more closely than that of the Washington instrument, an indication of less validity. Except at very low diagnostic cutoff points, the Washington instrument had higher sensitivity. Judging from the distances between the curves and the line of no information, both instruments pinpoint case closings at rates better than chance. The Illinois instrument works slightly better when higher cut-off points are used. Both instruments demonstrate better than chance performance with regards to case substantiation, and only at very low cutoff points does the Washington instrument yield lower false positive rates. Only for case recidivism is a statistically significant difference found between the Illinois and Washington instruments on overall predictive power. However, a Wilcoxon probability of .50 for a diagnostic test denotes a discriminating ability of chance, so the performance of both instruments might be characterized as generally poor. The Washington instrument shows consistent probabilities of .68 to .69, whereas the Illinois instrument shows considerable fluctuation in accuracy level.

None of the instruments are intended to be the only instrument for assessing the level of service required for an individual. The various assessment tools discussed cannot be used interchangeably for all types of offenders. Each instrument is applicable usually to specific subgroups of offenders. It is necessary to determine the subgroup to which the offender belongs to determine which instrument is most appropriate. The lack of homogeneity among offenders means that it is necessary either to develop a specific instrument for each subgroup of offenders or to include different types of behaviours as predictor variables in the instrument (Furr, 1993).

An accurate and efficient prediction instrument calls for a small number of stable items from efficient factors having a relatively high association with the criterion. These items are then used to predict an event in a population homogeneous with respect to the differences in factors controlling the event (Reiss Jr., 1951).

Survival curves or expectancy tables can be used to control for the differences among follow-up periods across studies. They can also help to answer questions about the probability of re-offence within a given period of time. Survival curves or expectancy tables are needed to adjust the predictions for shorter periods of time than are examined in the follow-up studies in which the tools have been based, and they also help to resolve apparent discrepancies across studies (Furr, 1993).

Receiver operating characteristics (ROC) were developed in the context of signal detection theory in engineering and psychophysics (Green & Swets as cited in Rice & Harris, 1995). A ROC curve is a plot of an instruments sensitivity or true-positive rate as a function of the instruments false-alarm rate. Generally, the greater the proportion of area under the curve, the greater the difference at each point between the true-positive and false-alarm rates, and the better the prediction instrument (Rice & Harris, 1995). ROC curve analysis provides a means for assessing the discriminating ability of a diagnostic tool such as risk assessment across the entire spectrum of diagnostic cut-off points (Camasso & Jagannathan, 1995). Rice and Harris (1995) also suggest that ROC's have advantages over other measures because, as they are simultaneously independent of the base rate for violence in the population studied and of particular cut-off scores chosen to classify cases as likely to be violent. When using ROC methods you also do not have to assume normal distribution. ROC methods can be used to compare the performance of different instruments for the prediction of violence. ROC's facilitate decisions about whether at a particular base rate the use of a prediction instrument is warranted.

However, unless there are sufficient points spread along the ROC to determine whether a line is well approximated by a straight line, it is risky to infer the performance of an instrument at points along the curve that have not been observed. Knowing the standard error of the area under the ROC is also important because the power of inferential tests about the size of ROC areas are inversely proportional to their standard errors (Rice & Harris, 1995).

ROC methods help policy makers decide whether to use a prediction instrument. If the policy maker has some idea of the base rate and can attach some costs to false-positive and false-negative errors, as well as to the costs of correct decisions and administering the test, than the decision can be based on a rational determination of comparative costs (Rice & Harris, 1995).

Strengths and Limitations of Assessment Tools

The LSI-R can be administered and scored in paper and pencil form and scoring is relatively quick and easy (Andrews & Bonta, 1995). However, the education/ employment sub-scale on the LSI-R may be difficult to assess with long-term offenders.

The requirement of the PCL-R score and phallometric test results limit the usefulness of the Statistical Prediction of Violent Recidivism Instrument in its present form. An additional problem with this checklist is that the scoring criteria are somewhat ambiguous; it is necessary to consult the original articles to clarify the meaning of some terms (Furr, 1993).

The PCL appears to have a number of strengths that are likely to appeal to clinicians and merit its inclusion in dangerousness evaluations. Reasons for employing the PCL/PCL-R include: a stable factor structure; good inter-rater reliability and test-retest reliability; and predictions of violence and future criminal behaviour appear to be as good, and in some cases better than existing measures (Harris, Rice & Cormier; Rice & Harris; Webster *et al*, as cited in Salekin, Rogers & Sewell, 1996).

However, a major disadvantage of the PCL-R is that it is expensive to apply. It requires adequate historical information and if an extensive history is not available it must be accompanied by a structured interview. Different interpretation systems are required for the file review and file review with interview methods of administration. Some degree of subjective judgement is needed (Furr, 1993).

Furthermore, the PCL was intended to assess the clinical conception of psychopathology as depicted in Cleckley's (1976) Mask of Sanity (Hare, as cited in Salekin, Rogers & Sewell, 1996). However, Rogers (as cited in Salekin, Rogers & Sewell, 1996) has observed that the PCL deviates from its theoretical underpinnings and that only four of Cleckley's criteria are paralleled in the PCL/PCL-R. Furthermore, there have been problems in determining what the two factors actually measure (Lilienfeld as cited in Salekin, Rogers & Sewell, 1996). Items that load on Factor 1 generally have low correlations with future criminal behaviour (<.20), as compared to Factor 2 scores (>.30) (Hare as cited in Salekin, Rogers & Sewell, 1996). Therefore, PCL A psychopaths, based on Factor 1 items may pose less of a risk than individuals with similar scores based largely on Factor 2 (Salekin, Rogers & Sewell, 1996). Harpur as cited in Salekin, Rogers & Sewell, 1996) suggests that Factor 2 is a better predictor of violent and non-violent recidivism than Factor 1. Moreover, the total score is an even better overall predictor of violent recidivism.

Use of the PCL/PCL-R also raises the difficult question regarding determining an ideal cutoff score for prediction purposes. If the cut-off score is too low, non-psychopaths may be classified as psychopaths. If the cut-off score is too high, clinicians may miss the accurate classification of psychopaths (Salekin, Rogers & Sewell, 1996).

The generalizability of the PCL-R to differing populations and clinical settings remains largely untested. Efforts to evaluate the reliability and validity are almost exclusively limited to forensic populations in the Canadian justice system. This population is primarily composed of white men, resulting in limited information regarding its applicability to minority, adolescent or female populations, although Hare (as cited in Salekin, Rogers & Sewell, 1996) reports that female offenders have lower scores on the PCL/PCL-R than male offenders.

Only simple addition is required for the SFS-81 and the greater the number of positive attributes, the greater the likelihood of favourable outcome upon release (Hoffman, 1983). A number of items have also been improved so that they are easier to score reliably, however, employment is a difficult item to score reliably on the SFS-81 because probation officers do not always have the time to verify the item (Hoffman, 1983).

All subjects used in the construction of the VRAG and in the cross-validation were assessed in one Canadian maximum security psychiatric facility. The VRAG might not yield equivalent performance with very different samples (Rice & Harris, 1997).

Assessing/ Predicting Recidivism

Clark (1948) found that the MMPI sub-scales provided no differential discrimination for recidivists as opposed to non-recidivists. Clark (1948) then attempted to develop a MMPI scale for the identification of recidivism by comparing groups of military AWOL first and multiple offenders. Of the 550 items, 24 were found in which there was a difference of 10 between the two groups. The 24 items selected were on the following scales: Hypomania, Psychopathic Deviate, Paranoia, Masculinity-femininity, L, F, Hypochondriasis, and Psychasthenia. Seven of the items do not appear in any of the clinical scales. Items from the Hypomania (Ma) and Psychopathic Deviate (Pd) Scales appeared to be the most valid in selecting recidivists. The 24 items were used to develop the recidivist or repeater key. The MMPI's of the two groups were rescored in order to obtain the number of deviant responses each man in the two groups scored on the recidivist key. A correlation of .75, with the difference between the means being 4.16 and the SE of the difference being .519. This provides a critical ratio of 8.01, which was above the level required for significance.

Clark (1953) used his 1948 recidivist key with a new group of AWOL repeaters and non-repeaters. Difference in mean scores indicated that the recidivists scored significantly higher. Ten of the original 24 items were selected as most valid. The 24-item scale was then applied to 104 AWOL's, 91 normals, and 57 schizophrenics. The means for the schizophrenic group and the normal group were significantly lower than that for the AWOL group.

Clark (1966) attempted to predict recidivism among offenders with a blind sort of MMPI profiles, and with a recidivism scale derived from the data. The predictions of non-recidivism were less accurate than might have been expected by chance, and predictions of recidivism were more accurate than chance results. Blind inspectional analysis of MMPI profiles do not yield significant differences between groups and such analysis is of little or no value in predicting future recidivistic behaviour. The 35-, 19-, and 5-item MMPI scales derived in the course of the present study also had no predictive value. Neither approach was successful in accomplishing its intended purpose.

Mack (1969) also examined the MMPI's of 80 recidivists and 68 parole successes from a state training school. Both groups in the study showed a considerable degree of personality disturbance, but no important differences with regards to their personality adjustment were identified. Mack (1969) concluded that the MMPI used alone is not useful in identifying recidivists in relatively homogenous delinquent populations

Panton (1962) compared the MMPI records of 50 habitual criminals with the MMPI records of a similar group of imprisoned first offenders. With the exception of the main differences on the Pd, Ma, and Ap scales there were similarities between the profile curves for the two groups. The mean Pd, Ma, and Ap elevations for the habituals implies a greater sociopathy and a lower tolerance for stress than is indicated for the non-habituals. The comparison of profiles was followed by an attempt to differentiate the two groups with raw score distributions on the Pd, Ma, and Ap scales. The most effective differentiation was obtained by combining the Pd and Ap items into a single scale. The habituals were then differentiated from the non-habituals on this 77-item scale, which was labelled the Habitual Criminal Scale (HC). The HC scale was then validated on additional samples of recidivists and first offenders. With a cut-off score of 32, the scale was found to successfully identify 76% of habitual criminals and 74% of non-habituals. The difference between the HC means for the two groups was 5.96%, which is significant beyond the .01 level of confidence. However, the predictive accuracy of the scale drops considerably for the recidivist group when the number of prior sentences is reduced to two and one respectively. Panton (1962) suggests that the HC scale should be used with caution until it can be submitted to further validation with additional first offender groups.

Ingram *et al.*, (1985) examined recidivism, perceived problem solving abilities, type of offence, and personality characteristics in an incarcerated male population. Results of this study indicated that only the MMPI L, Re, Do and F scales and impulsive scales on the problem solving inventory produced significant results. However, some of the significant results found in the analysis of the data are limited in their interpretability because the scale score falls within the normal range of MMPI scores. For instance the L scale was shown to differentiate black non-recidivists from black and white recidivists. However, all four groups fall within the normal scoring range of the MMPI, so neither group is really pathological. Another similar finding was on the Re scale. The significant scores on the Do scale may also be limited, considering the highest group mean score was 52.88 and only scores above 60 are considered pathologically interpretable. On the other hand, black recidivists generated higher scores on the F scale than did back or white non-recidivists, which suggested that incarcerated black recidivists exhibited more deviant behaviour than black or white non-recidivists did. Recidivists also scored significantly higher than non-recidivists did on the impulsive scale of the problem solving inventory. Furthermore, the Pd scale reported a significant main effect for type of offence and race ($p< .05$). Offenders, regardless of race, incarcerated for violent crimes scored higher on the Pd scale than non-violent criminals.

Ashford and LeCroy (1988) used discriminant analysis to examine the extent to which the Wisconsin instrument could discriminate between recidivists and non-recidivists. They found that only one of the eight variables was significantly related to recidivism--age at first arrest. Age at first adjudication and prior criminal behaviour were the two items having the strongest relationship with recidivism and both are criminal history variables. The social variables (e.g., parental control) were not as helpful in making discriminations. It may be difficult to reliably measure the socially oriented variables. The instruments' total risk score could not discriminate between the recidivist and non-recidivist groups, bringing into question its validity. There was an extremely weak (.09) relationship between the total summary score and recidivism. The overall percentage of correctly classified cases was 65% and misclassification of a predicted non-recidivist was 20%.

Ram (1987) compared personality aspects of murderers with non-murderer criminals who were recidivists. The Personality Inventory of Eysenck (1970) was administered individually. Results indicate the recidivists' scored higher on extroversion and neuroticism than the murderers. The murderers on the other hand scored high on psychoticism.

The PCL-R has been found to predict general recidivism in a general population of offenders (Hart, Kropp & Hare as cited in Furr, 1993). Retrospective studies (Hare and McPherson; Wong; Serin as cited in Furr, 1993) also indicate that offenders who score high on the PCL-R have more violent histories than offenders with lower PCL-R scores do (Furr, 1993).

Serin (as cited by Furr, 1993), found that PCL-R scores were related to violent recidivism (r = .28), however, the base rate of violent recidivism was only 25%. This suggests that the PCL-R has only limited usefulness in predicting violent recidivism in the general population of offenders across short follow-up periods. The very low rate of violent re-offending among the lowest scoring group suggests that it may be easier to identify those with very low probability of violent re-offending using the PCL-R (Furr, 1993).

On the other hand, in Harris, Rice and Cormier's study (as cited by Furr, 1993) the PCL-R was successful in predicting future violent criminal offences. Those offenders receiving low scores on the PCL-R had low rates of violent re-offences (20% probability of re-offence); those receiving the highest scores on the PCL-R had high rates of violent re-offence (over 77%). Moreover, Rice, Harris and Quinsey (as cited in Furr, 1993; Rice & Harris, 1995) administered the PCL-R to 54 rapists released from a mental health center. The PCL-R scores were significantly correlated with sexual re-offending (r = .31) and with any violent re-offending (r = .35). Quinsey, Rice, Harris, and Lalumiere (as cited in Furr, 1993) obtained PCL-R scores on a group of 214 sex offenders released from the same mental health center and found that about 90% of sex offenders with PCL-R scores of 20 or more had a violent failure (Furr, 1993).

Furthermore, researchers (Hall & Hirschman; Quinsey, Lalumiere, Rice, & Harris as cited in Rice & Harris, 1997) report that among rapists, scores on the PCL-R and among child molesters, age, marital status, alcohol abuse, personality disorder, victim gender in past offences, and relationship between victim and offender in past offences have all been shown to predict new sexual offences.

The magnitude of correlations between the PCL-R and violent recidivism has ranged from .25 to .35. Therefore, the PCL-R may not be able to predict future violent re-offending among the general population of offenders, but may predict future violent re-offending among groups of released offenders who have previously been convicted of a violent offence, who have a high base rate for re-offence, and where there is a long follow-up (Furr, 1993).

The LSI was administered to over 500 provincially incarcerated adult women. Use of LSI scores for prediction produced relative improvement over chance scores for over one and two-year recidivism, parole failure, and halfway house non-compliance ranging from 55% to 71%. Across all types of discharge, high-risk offenders were more likely to fail on release than low-risk offenders (Coulson, Ilacqua, Nutbrown, Giulekasekas & Cudjoe, 1996).

The Adience-Abience and Psychopathology Scales of the HABGT were applied under pre-treatment and post-treatment conditions to 120 male delinquents. Comparison with other personality variables, prediction of recidivism, and analysis of mean scores on the two scales with the means of normal and disturbed children of comparable age were attempted. The delinquent group was more abient than normal children and was significantly higher in psychopathology than either normals or disturbed children. Significant correlations were obtained between Adience-Abience and psychopathology and recidivism. Although neither scale alone nor both scales in combination was highly predictive, the scales can be used for group planning. Both scales are shown to have utility for use in prediction of repeat offences in a population of untreated delinquents and for the differentiation of high and low-risk youth (Hutt, Dates, & Reid, 1977).

A cross-validation of the Violence Risk Appraisal Guide (VRAG) was performed on a sample of 159 child molesters and rapists followed for an average of 10- years at risk. The performance of the instrument was also examined on a 10-year follow-up of 288 sex offenders. The instrument performed as well as it had in construction for predicting violent recidivism in both the cross-validation and extended follow-up samples, and moderately well in the prediction of sexual recidivism. Furthermore, survival analysis showed that child molesters exhibited higher risk of sexual recidivism than rapists or offenders against both children and adults, whereas the opposite was true for violent recidivism. Psychopathy and phallometrically determined sexual deviance had a multiplicative effect on sexual recidivism. Victim injury, was positively related to sexual recidivism and unrelated to violent failure. Being a rapist or a homosexual child molester or having victims from multiple categories was associated with sexual and violent recidivism. Sexual deviance may be a more important factor for child molesters than for rapists; whereas general criminal deviance, lack of self-control, and psychopathy may be more important for rapists. Rice and Harris' (1997) study presents results that strongly support the VRAG for actuarial prediction of violence, including sexual violence, among high-risk offenders.

Indicators from Case Needs Identification and Analysis

Systematic assessment of federal offender needs, their risk of re-offending, and any other factor that could affect successful offender reintegration into the community is a major component of both the Correctional Service of Canada and National Parole Board standards for conditional release supervision. Ensuring that criminogenic need drives community-based programming and service delivery that focuses on successful reintegration into the community has evolved into the Correctional Service of Canada Correctional Strategy (Motiuk, 1999, Motiuk & Brown, 1993).

Previous research on the predictive value of offender risk/needs assessments has found that criminal history factors are strongly related to outcome on conditional release (Glaser, 1987; Gottfredson & Tonry, as cited in Motiuk, 1999; that a consistent relationship exists between the type and number of needs that offenders present and the likelihood of their re-offending (Bonta & Motiuk); and, that combined assessment of the level of both risk and needs significantly improves our ability to predict who is likely to re-offend and who will not (Motiuk & Porporino, as cited in Motiuk, 1999).

At intake to federal corrections, a Criminal Risk Assessment is based on criminal history record, the offence severity record, the sex offence history checklist, whether detention criteria are met, the results of the SIR-R1 Scale and any other risk factors as detailed in a criminal profile report (Motiuk, 1999; Motiuk, 1997).

The Case Needs Identification and Analysis protocol collapsed the 12 need areas of the Community Risk/Needs Management Scale into seven need dimensions or target domains which include: employment, marital/family, associates/social interaction, substance abuse, community functioning, personal/emotional orientation and attitude. A list of indicators and rating guidelines are provided for each criminogenic need area. An assessed level of need is simply the compilation of case manager judgements into one of three categories: low-, medium- or high-need (Motiuk, 1999; Motiuk & Brown, 1993).

With a cohort of over 7000 cases tracked over 2 years, higher risk/need offenders were more likely to be suspended than lower risk/need offenders. This finding was most robust in the early phases (within 6 months) of follow-up (Motiuk 1999; Motiuk & Brown, 1993). Offenders assessed as high-risk/high-need were four times as likely to have their conditional release suspended as those assessed as low-risk/low-need. More than one-third (36.7%) of the offenders assessed as high-risk/high-need had their conditional release suspended within six months of their initial assessment, compared with just 9% of those assessed as low-risk/low-need. The 9% suspension rate observed among those assessed as low risk/low need cases was substantially below the 21% overall base rate for suspension of male releases. The combination of assessments of risk and need then improved the accuracy of predicting which offenders were more likely to succeed or fail on conditional release (Motiuk & Brown, 1993).

There is considerable variation across the differing need areas between male and female offenders. At the time of admission, male offenders were more likely to have been experiencing problems in substance abuse and attitude (Motiuk, 1997). Motiuk and Brown (1993) report that male offenders were also found to have more identified needs in the areas of associates/social interaction. However, female offenders were more likely to have difficulties with associates and significant others (Motiuk, 1997). Motiuk and Brown (1993) specifically report that women offenders showed more problem areas in employment, marital/family and community functioning than men. Both men and women were similar in the percentage of cases identified with personal/ emotional needs (Motiuk, 1997; Motiuk & Brown, 1993). Motiuk (1997) suggests that men and women offenders were also equally as likely to have been experiencing difficulties in the areas of employment and community functioning. Furthermore, a larger proportion of women identified two or more needs than male offenders on conditional release (71% and 65% respectively) (Motiuk & Brown, 1993).

All seven need areas were significantly related to an offender's likelihood of succeeding or failing on conditional release. Some of the factors found to be important in predicting an offenders failure on conditional release were a lack of education, dissatisfaction with job/trade/skill, unstable job history, marital problems, poor family functioning, criminal associations, unstable accommodation, poor financial management, weak cognitive job/trade/skill, unstable job history, marital problems, poor family functioning, criminal associations, unstable accommodation, poor financial management, weak cognitive skills and antisocial behaviour/attitudes. However, variables such as learning disability, physical impairment, physical or sexual abuse as a child, social isolation, assertiveness, health, self presentation, sexual dysfunction and mental deficiency were found to be unrelated to an offenders conditional release outcome. Furthermore, the less motivated offenders were to address identified needs in the marital/family, associate/social interaction, community functioning, personal/ emotional orientation and attitude areas, the more likely they were to have their conditional release suspended. While statistical significance was not reached for employment and substance abuse domains, the same pattern of results were obtained with lower levels of motivation to address these needs (Motiuk & Brown, 1993).

Seventy-two percent of release cases received special conditions in relation to substance abuse (to abstain) and 50% for the personal/emotional orientation domain (to go for counselling). Of all the seven need areas covered by special conditions, a significant relationship was only found between personal/emotional needs and outcome on conditional release (Motiuk & Brown, 1993).

Static variables such as criminal history probably have more predictive power than needs at the early stages of release. This is because over time, if an offender is going to manifest recidivism, it is the dynamic variables (such as employment status, marital family situation, addictions, etc.) that begin to drive the likelihood of recidivism (Motiuk, 1999).

Because the individual ratings for both criminal risk and case need levels as well as for each need area were kept at intake, it is possible to align the community-based version or risk/need assessment with the prison intake version. The capacity now exists to assess offenders at admission in a comprehensive, integrated and systematic fashion and reassess them routinely thereafter (Motiuk, 1999). The focus of Case Needs Identification and Analysis has shifted from a correctional strategy exercise of surveying offender needs to an enhanced offender management strategy (Motiuk & Brown, 1993).

Historically, researchers have attempted to differentiate between those offenders who fail and those who succeed by using readily available file information (e.g., type of index offence, age of first arrest) (Serin, 1996). The predictive validity of the Psychopathy Checklist-Revised (PCL-R) was compared with 3 actuarial risk scales in a sample of 81 offenders followed for a maximum of 67 months (average of 30 months). The recommittal or general recidivism rate for the entire sample as 57% (40% for nonpsychopaths, 51.2% for a mixed group, and 85% for psychopaths). The violent reoffence rate was 10% for the sample (nonpsychopaths 0%, mixed 7.3%, psychopaths 25%). All instruments were significantly correlated with general recidivism; however, the PCL-R was the best predictor of violent recidivism. Compared to the actuarial scales, the PCL-R had a higher predictive efficiency (Relative Improvement over Chance (RIOC)) and yielded fewer decision errors. Factor 1 was associated with violent recidivism, $F(1,77) = 5.67$, $p<.02$, and Factor 2 waith general recidivism, $F(1,77) = 9.23$, $p<.003$. Most importantly, Factor 1 was a better predictor of violent recidivism than Factor 2, suggesting that the trait construct of psychopathy makes a unique contribution to the prediction of violent recidivism (Serin, 1996).

Wormith and Goldstone (1984) conducted a series of studies to investigate characteristics of a previously devised Recidivism Prediction Scheme with a regional sample of offenders and to assess possible means of integrating clinical and actuarial data sets. The first study revealed high interrater reliability coefficients, although agreement varied by items. Natives, maximum security inmates, and property offenders received poor prognostic scores in both the first and second studies. The second study provided validity data on the instrument and suggested how clinical and statistically based decisions might be integrated. The third study, however, found that the incorporation of clinical data into an actuarial scheme did little to improved the predictive accuracy of both multiple regression and unit weight systems when they were subjected to cross-validation (Wormith & Goldstone, 1984). This investigation revealed that the data collection and coding of the traditional legal and demographic variables was less than totally reliable. Coding errors usually occurred by omission in that a pertinent piece of information was overlooked or not recorded on a particular source document. The researchers caution about a false sense of security over seemingly objective variables and simple coding procedures. The reliability of the more subjective variables, which usually entailed a clinical assessment of offenders, was quite acceptable when detailed scoring systems were provided or inmate ratings were performed in a checkbox format (Wormith & Goldstone, 1984). The ~~study~~ revealed consistent relationships between release outcome and the anticipated failure of various offender groups such as natives, property offenders, and maximum-security inmates (Wormith & Goldstone, 1984).

Investigators who have advocated the use of the statistical as opposed to the clinical approach with regard to recidivism prediction consistently have suggested the use of formal measurement devices that have some degree of assessed reliability and validity, in order to make the decision-making process more scientific, equitable, and consistent than it has been in the past (Mandelzys, 1979).

One of the more widely used actuarial prediction instruments is the California Base Expectancy Scale developed by Gottfredson and Bonds in 1961, that consists of a 12-item checklist developed through multiple regression techniques which has been shown to be a reliable and valid device in terms of predicting post-prison recidivism among incarcerated offenders. Derived primarily from an instrument developed by the California Department of Corrections Research Division, it has been validated twice and its predictive capability has been shown to be approximately 70% for those who score within the top 25% and bottom 35% (Mandelzys, 1979).

Another actuarial device that has been used is the Index of Offence Severity developed by Hoffman, Beck, and DeGostin (1973). The scale is based on offence severity ratings made by members of the U.S. Federal Parole Board and has been used in several research contexts since it was first published (Mandelzys, 1979).

The majority of studies that have utilized psychometric and/or background variables have found either no group differences or differences of such small magnitude as to be insignificant in discriminating among different types of offenders and/or recidivism probability. Part of the reason for this state of affairs may be that researchers have not been cognizant of the fact that offence severity and recidivism probability are correlated to a statistically significant degree. In other words, individuals who commit different offences also differ considerably in the probability that they will be recidivists (Mandelzys, 1979).

Differences in measuring criminality create a problem in interpreting the limited research investigating the prior record of sex offenders. The majority of previous research studies were concerned only with sex offenders with prior convictions for sex offences. Therefore, it is not surprising that the conclusion reached is that sex offenders generally do not have a serious prior criminal history or serious sex crimes in their past (Romero & Williams, 1984).